AC. 174

ZANZIBAR PROTECTORATE.

ANNUAL REPORT

ON THE

MEDICAL DEPARTMENT

FOR THE YEAR

1923.

ZANZIBAR:

Printed by the Government Printer.

1924.

ANNUAL MEDICAL & SANITARY REPORT

ZANZIBAR PROTECTORATE.

1923.

Remarks by the Medical Secretary.

. General Remarks.

The number of cases attending at Government Hospitals and dispensaries continues to be large. There is increase of nearly 9,000 since 1921. The principal mortality is from smallpox being 60 out of 148 deaths.

General Diseases.

4. Malaria and Ankylostomiasis are the commonest diseases.

Malaria.

4. There is a considerable increase in the number of cases attending 3.072 against 2.011 in 1922.

5. The Principal Medical Officer points out the necessity for investigation and an anti-malarial campaign in Zanzibar Town.

.5. Blackwater Fever.

There were 6 cases and 2 deaths and all the patients had taken prophylactic Quinine irregularly or in inadequate doses.

.6. Undefined Fevers.

The number recorded has fallen off due to the more accurate diagnosis of Malaria, which has risen correspondingly.

.7. Dysentery.

Amoebic and bacilliary cannot be differentiated as the cases are reported by unqualified persons. There is a satisfactory reduction in the number of cases recorded 24 cases with no deaths against 56 cases and one death in 1922.

Smallpox and Vaccination.

.8 &16. There was a considerable outbreak of this disease during the year 236 cases with 60 deaths being recorded. 43.263 persons were vaccinated during the year which is a good record of

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of work. In the Township over ½ being successful.

p.9. Ankylostomiasis

There is a very high infection about 95% of the population being infected. The Principal Medical Officer recently wrote a memorandum on the subject giving a scheme for the treatment. The Committee will endorse the necessity for the Government seriously considering it.

p.9. Elephantiasis.

There still continue to be a considerable number of cases of this disease reported. It is to be hoped that with the mosquito prevention organisation being in the hands of the Economic Biologist the breeding may be abated.

p.11. Births and deaths.

The Records are reported to be unreliable, but from the Register there are 1.554 more deaths than births in the protectorate. The cause of the infertility of the "Swahilis" has not been so far determined, but Ankylostomiasis and malaria are important factors.

p.14. Legislation.

The Committee will note with pleasure the increased stringency in the amended Public Health decree, with mosquito and insect borne diseases so prevalent. This is very necessary.

Water Supply.

p.16. It is satisfactory to note the new Town supply is abundant and of good quality, but it is to be regretted that standpipes cannot be installed and the polluted wells closed.

p.18. Drainage and Conservancy.

The question of a drainage scheme seems to be a matter of urgency, but the difficulty appears to be insufficient fall

except

except in Shangani and Vuga. The native Choo is reported to be a "noisome horror". It is satisfactory to note that in some places they are replacing them with "trough-closets" which drain into the Creek.

Refuse Disposal.

p.19. The Committee will be pleased to note that a modern Refuse Destructor has been sanctioned situated away from the Town and that the dumping of rubbish will be a thing of the past.

Town Planning.

p.20. A Town planning scheme is a necessity and it is to be hoped it will soon be undertaken and not be as in so many places abandoned for want of Surveyors.

p.21. Housing.

The housing of animals especially goats is a very unsatisfactory state of things and it is to be hoped that the proposal to have sanitary pens on the reclaimed area will be carried out at once.

.21. Police Lines.

It is satisfactory to note that the unsanitary condition of the police latrines has been rectified.

p.22. Cow-sheds and Dairies.

The Committee will note with pleasure the success of the Government Model sheds, a very important point from ~~a~~ the view of town sanitation.

.24. Port Quarantine Service.

The building of a cleaning and delousing station in the Immigration Area is very necessary.

.28. School Medical Service.

It is pleasing to note that the school clinic is nearing completion and I expect is now working and that Zanzibar has

come

come into line with Western countries and is in advance of most Tropical countries, and it is to be hoped that the administratio will give generous encouragement to the provision of more hygieni and better school buildings.

3. **Teaching of Hygiene in Schools.**

The Committee will be pleased to see that the teaching of Hygiene and Sanitation is included in the School curriculum.

5. **European Hospital.**

A new European hospital has been completed and occupied.

36. **Anopheline.**

The seepage areas on the hill above the prison should be eliminated as soon as possible.

37. **Recommendations.**

The Committee will wish to endorse the Principal Medical Officer's recommendations which all seem to be very necessary (at present the staff is insufficient for the work).

48. **Debility.**

The number of deaths 250 ascribed to this cause is large but they are reported by unqualified persons.

71. **Yaws.**

It is satisfactory to note that the treatment by Sodium Bismuth Tartrate was entirely satisfactory.

.80. **Appendix 111. Maternity Association.**

The success of this association is to be commended. They appear to have done good work, and it is hoped that funds will b forthcoming to increase the scope.

Remarks.

The Committee will wish to congratulate the Principal Medical Officer, Dr. J. A. Taylor on the report and the progress that is being made.

(Int) G.J. R.

24.4.25.

Principal Medical Officer's Office,
Zanzibar,
1st October, 1924.

Sir,

I have the honour to submit, the Medical Report on the Health and Sanitary Condition of the Zanzibar Protectorate for the year 1923.

I have the honour to be,
Sir,
Your obedient servant,

J. A. TAYLOR,
Principal Medical Officer,
Zanzibar Protectorate.

The Chief Secretary to the Government,
ZANZIBAR.

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REPORT ON THE MEDICAL, SANITARY AND BIOLOGICAL DIVISIONS,

FOR THE YEAR ENDED 31st DECEMBER, 1923.

SECTION I.

ADMINISTRATION.

STAFF.

The establishment for 1923 as sanctioned in the Estimates was as follows :—

EUROPEANS.

One Principal Medical Officer.
One Senior Medical Officer.
Four Medical Officers.
One Senior Medical Officer of Health.
One Assistant Medical Officer of Health.
One Economic Biologist.
One Sanitary Superintendent.
One Matron.
Six Nursing Sisters.

ASIATICS.

One Chief Sanitary Inspector.
Six Sub-assistant Surgeons (2 Grade I, 4 grade II).
Ten Dispensers (4 Grade II, 6 Grade III).
Nineteen Sanitary Inspectors (2 Grade II, 9 Grade III, 6 Grade IV, 2 ungraded).
One Vaccinator (Grade II).
One Chief Clerk and Storekeeper, Medical Division (Grade I).
One Chief Clerk, Sanitary Divison (Grade II).
Seven Clerks (2 Grade III, 5 Grade IV).
One Storekeeper (Grade II).
One Senior Laboratory Assistant.
One Laboratory Assistant (Grade III).
One Inspector of Dead (Grade I).
Two Sanitary Overseers (ungraded).
One Engineer and Foreman.

NATIVES.

Hospital and Dispensary Attendants.
Infectious Disease Hospital Attendants.
Vaccinators.
Menial Staff.

APPOINTMENTS.

EUROPEANS.

Dr. J. A. Taylor, Principal Medical Officer, on transfer from Uganda, March 11th, 1923.

Dr. D. S. Scott, Medical Officer, on transfer from Tanganyika, July 7th, 1923.

Dr. W. A. Young, Medical Officer, October 2nd, 1923.

Miss G. M. Rainey, Nursing Sister, September 5th, 1923.

Mr. P. Cairns, Sanitary Superintendent, on transfer from Kenya, December 9th, 1923.

ASIATICS.

Dewan Singh, Sub-Assistant Surgeon, from March 4th, 1923.
B. N. Gandavia, Sanitary Inspector, from December 1st, 1923.
Mahomed Ali Remtulla, Sanitary Overseer, from December 1st, 1923.

ACTING APPOINTMENTS.

Dr. B. Spearman, Medical Officer of Health, as Principal Medical Officer from January 1st, 1923, to February 13th, 1923.

Dr. J. S. de Sousa, Senior Medical Officer, as Principal Medical Officer from February 14th, 1923, to March 10th, 1923.

Dr. H. W. L. Waller, Medical Officer, as Principal Medical Officer from May 5th, 1923, to October 31st, 1923.

Dr. H. W. L. Waller, Medical Officer, as Senior Medical Officer from November 1st, 1923, to December 31st, 1923.

Dr. H. C. E. Quin, Assistant Medical Officer of Health, as Medical Officer of Health from March 7th, to end of year.

PROMOTIONS,

Miss A. E. Chambers, Nursing Sister, to be Matron from August 12th, 1923.

RETIREMENT.

Mrs. E. K. Zurcher, Matron, on August 11th, 1923.

AGREEMENTS TERMINATED.

EUROPEANS.

Dr. P. L. L. Craig, Temporary Medical Officer, on November 12th, 1923.
Dr. H. G. Phippen, Temporary Medical Officer, on November 3rd, 1923.

ASIATICS.

Niamat Ullah, Temporary Sub-Assistant Surgeon, on January 19th, 1923.

RESIGNATION.

Miss A. B. Bailey, on November 24th, 1923.

INVALIDINGS.

Dr. J. S. de Sousa, Senior Medical Officer.
Mrs. E. K. Zurcher, Matron.

LEAVE.

Dr. J. S. de Sousa, Senior Medical Officer, from January 1st, 1923, to ebruary 14th, 1923.

Dr. J. A. Taylor, Principal Medical Officer, from May 1st, 1923, to ovember 1st, 1923.

Dr. J. S. de Sousa, Senior Medical Officer, from June 11th, 1923, to nd of year.

Dr. P. L. L. Craig, Medical Officer, from July 19th, 1923, to November 2th. 1923.

Dr. H. G. Phippen, Medical Officer, from July 4th, 1923, to November d 1923.

Dr. B. Spearman, Senior Medical Officer of Health, from March 7th, 1923, end of year.

Dr. W. M. Aders, Economic Biologist, from November 25th, 1923, to nd of year.

Mrs. E. K. Zurcher, Matron, from May 1st, 1923, to August 11th, 1923.

Miss A. E. Chambers, Nursing Sister, from January 1st, to January 28th, 923.

Miss Gittins, Nursing Sister, from January 1st, 1923, to February 8th, 923.

Miss N. Marson, Nursing Sister, from October 12th, 1923, to end of year.

J. F. de Cruz, Dispenser, from January 1st, 1923, to March 18th, 1923.

J. M. Noronha, Clerk, from January 1st, 1923, to April 15th, 1923.

J. K. Gohel, Inspector, from May 9th, 1923, to December 9th, 1923.

A. G. Kark, Senior Laboratory Assistant, from July 17th, 1923, to Novem-er 11th, 1923.

A. A. Madhani, Inspector, from October 10th, 1923, to end of year.

S. de Souza, Clerk, from October 10th, 1923, to end of year.

H. C. Rozario, Inspector, from November 21st, 1923, to end of year.

A. P. Nunes, Inspector, from December 4th, 1923, to end of year.

SECTION II.

PUBLIC HEALTH.

A. GENERAL REMARKS.

The total number of cases treated at Government Hospitals and Dispensaries was 38,156 with 148 deaths as compared with 34,322 cases with 133 deaths in 1922 and 29,265 cases with 120 deaths in 1921. As in previous years, a large proportion of the deaths was due to Small-Pox, the numbers being 60 in 1923 as compared with 54 and 56 in 1922 and 1921 respectively.

1. GENERAL DISEASES.

During the past year 727 cases of Anæmia and 571 cases of Debility were treated. The large number suffering from these conditions is no doubt due chiefly to the prevalence of Ankylostomiasis and to a less extent of Malaria. Seven cases of Goitre, seven cases of Diabetes and one of Hodgkin's Disease were also recorded. In Zanzibar Town 250 deaths were reported from all sources as due to Debility and 56 deaths as due to Anæmia.

2. COMMUNICABLE DISEASES.

(a) *Mosquito or Insect-Borne.*

Malaria.—3,072 cases with one death were recorded as compared with 2,011 cases with no deaths in 1922 and 1,673 cases with no deaths in 1921. The cases treated last year were classified microscopically and clinically as follows:—

Benign Tertian ...	1,989
Sub-Tertian ...	813
Quartan ...	9
Chronic ...	261

The following table shows the number of cases treated at each station during 1923, 1922 and 1921.

Station.	1923.	1922.	1921.
ZANZIBAR ISLAND.			
Zanzibar	1,301	689	273
Selem	104	54	71
Mkokotoni	86	24	49
Mwera	11	7	27
Machui and Koani	72	—	21
Chwaka	10	1	19
PEMBA ISLAND.			
Weti	439	303	469
Chake Chake	699	553	633
Mkoani	350	380	110
	3,072	2,011	1,672

From the above figures it will be seen that the total number of cases treated has increased by 1,072 as compared with 1922 and by 1,411 as compared with 1921. Of this increase Zanzibar Town accounts for 622 as compared with 1922 and 1,039 as compared with 1921. This increase may, however, be more apparent than real, more accurate diagnosis having transferred to this heading many cases previously recorded under Undefined Fever. The prevalence of Malaria in Zanzibar, as indicated by the large number of cases treated at the Government Hospitals and Dispensaries alone, cannot however be considered anything but unsatisfactory and calls for investigation and the more vigorous prosecution of antimalarial measures.

Blackwater Fever.—Six cases of Blackwater Fever with two deaths were recorded during the past year, as compared with nine cases with one death in 1922 and five cases with one death in 1921.

The patient in each of the two fatal cases was an English Official, in one case the death being due to Cardiac Failure and in the other to Suppression of Urine. The nationalities of the four remaining patients were Goans two (both officials), Parsi one, and Chinese one, all of whom recovered. Intense jaundice and vomiting occurred in five of the cases, suppression of urine occurred in one case.

Previous Attacks.—Three of the patients had suffered from previous attacks of Blackwater Fever. One of the English patients had suffered from an attack thirteen months previously in June, 1922, prior to residence in this Protectorate, and the Chinese patient stated that he had had two attacks also prior to residence here. One of the Goan officials had had an attack only five weeks previously in December, 1922, while stationed in Pemba, the present attack occurring about a week after his arrival in Zanzibar on sick leave.

Sex and Age.—All the patients were of the male sex and the ages varied from 26 and 48 years.

Predisposing and Exciting Causes.—All the patients had resided for some years in Tropical Africa and had suffered from numerous attacks of Malaria. Malarial parasites, type undefined, are recorded as having been found in four of the cases after the onset of the hæmoglobinuria. All the patients had also been in the habit of taking quinine irregularly as a prophylactic and in inadequate doses during and after previous attacks of Malaria. In one of the fatal cases no quinine had been taken within two days of the onset of the hæmoglobinuria. In both of the fatal cases the duties of the deceased entailed more then ordinary solar exposure and—a very usual history in such cases—both patients were carrying out their duties and exerting themselves in the sun while actually suffering from the attack of Malaria which preceded the Blackwater Fever.

Locality.—Four of the patients had resided in Zanzibar Island for several months prior to the attack; one within the township, two on the outskirts of the town within the township boundary, and one two miles outside the township. The two remaining patients, although the hæmoglobinuria commenced in Zanzibar, had resided in Pemba up to within a fortnight of the attack, one coming to Zanzibar on account of continued ill health and the other on sick leave after recovery from an attack of Blackwater Fever five weeks previously.

Seasonal Incidence.—Each case occurred in a different month of the year, viz., January, March, May, June, September and November. From the following table it will be observed that these are also the months during which the malarial incidence was greatest.

	No. of cases of Malaria treated.	Blackwater Fever cases.
January	423	1
February	207	—
March	366	1
April	184	—
May	333	1
June	353	1
July	205	—
August	208	—
September	237	1
October	191	—
November	202	1
December	163	—
Total cases	3,072	6

Dengue.—Two cases were reported during the year as compared with no cases in the two previous years. There is no doubt that this disease is more common than the returns show and that some of the "Undefined Fever" cases would more correctly come under this heading.

Undefined Fever.—557 cases were recorded last year as compared with 1,085 in 1922 and 1,482 in 1921. This decrease corresponds with the increase in the number of cases of Malaria to which reference has been made and indicates a more accurate diagnosis. Of the cases still remaining under this heading, some no doubt are common diseases such as Malaria, Influenza and Dengue with complications or atypical symptoms, but making due allowance for these there appear to be one or more varieties of fever in the Protectorate of which the cause is at present undetermined. In Zanzibar Town 32 deaths were reported during the year under this heading.

(b) *Infectious or Epidemic Diseases.*

Beri-Beri.—Three cases, two in Zanzibar and one in Pemba, with one death, were recorded during the past year. In 1922 one case, and in 1921 four cases occurred in Zanzibar.

Cerebro-Spinal Meningitis.—Two cases with one death were reported from Pemba. Three fatal cases occurred in Zanzibar in 1922. In 1921 no cases were recorded.

Dysentery.—A satisfactory reduction is shown in this disease, 24 cases with no deaths being recorded as against 55 cases with one death in 1922 and 44 cases with one death in 1921.

Enteric Fever.—Six cases with no deaths were recorded as compared with six cases with two deaths in 1922 and 10 cases with no deaths in 1921. Of the six cases treated during the year one was Typhoid, the remaining cases being Paratyphoid B. In 1923, one death and in 1922 two additional deaths in Zanzibar Town were registered by private practitioners as due to Enteric Fever.

Gonorrhœa.—797 cases were treated during the year. In 1922 and 1921 there were 711 and 691 cases respectively.

Influenza.—290 cases with no deaths were recorded as compared with 571 cases with two deaths in 1922 and 95 cases in 1921. In 1922 three deaths were also registered by private practitioners and in 1923 one death.

Leprosy.—Eighteen cases, 13 from Pemba and five from Zanzibar, are included in the year's hospital and dispensary returns, but 13 other cases, making a total of 31 cases, were transferred to Funzi Island Leper Settlement during the year. The number of lepers remaining in each of the Leper Settlements at the end of the year was as follows :—

Funzi Island	64
Nduni	30
Kengeji	25
Pujini	47
Fufuni	6

Measles.—Eighteen cases were recorded during the year of which six occurred in Pemba and 12 in Zanzibar Island.

Pneumonia.—101 cases with eleven deaths were treated during the past year as compared with 100 cases with 13 deaths in 1922 and 60 cases with 14 deaths in 1921 Of last year's cases 46 occurred in Pemba.

Small-Pox.—236 cases with 60 deaths were recorded during the past year. Of these 33 cases with four deaths occurred in Pemba. The following Table compares these figures with those of the previous two years :—

	1923.		1922.		1921.	
	Cases	Deaths.	Cases	Deaths.	Cases	Deaths.
Zanzibar Island	203	56	167	54	158	56
Pemba	33	4	10	0	2	0
Total	236	60	177	54	160	56

Syphilis.—263 cases were treated in 1923 as compared with 463 cases in 1922 and 328 cases in 1921.

Tetanus.—One case was treated last year, one in 1922 and four in 1921. All six cases terminated fatally.

A second fatal case was also reported in Zanzibar last year by a private practitioner.

Tuberculosis.—90 cases with 10 deaths were treated last year as compared with 133 cases and seven deaths in 1922 and 89 cases with nine deaths in 1921. The deaths reported from this disease in Zanzibar Town during the past three years were as follows :—

	Reported by Qualified Practitioners.	Reported by Unqualified Practitioners.	Total.
1921	35	70	105
1922	22	141	163
1923	30	155	185

The total can be taken as approximately correct as in all cases of deaths not registered by qualified practitioner the bodies are inspected and full enquiries made by an experienced Sub-assistant Surgeon.

Yaws.—Two hundred and nine cases were treated last year as compared with 365 cases in 1922.

(*c*) *Helminthic Diseases.*

The number of cases treated as compared with the two previous years was as follows :—

	1923.	1922.	1921.
Bilharzia	130	122	96
Ascaris	50	84	15
Filaria	274	211	138
S. Intestinalis	12	6	—
Ankylostomum	2,511	2,033	947
Other Diseases	28	3	5
Total	3,005	2,459	1,201

Of the cases of Ankylostomiasis treated last year, six ended fatally as compared with 10 in 1922 and six in 1921. In Zanzibar Town 22 deaths were reported last year as due to this disease. These figures however give a totally inadequate conception of the prevalence of Ankylostomiasis. Since investigations have shown that 92 to 95 per cent. of the population of Pemba are infected, and probably the same proportion of the bare-footed population of Zanzibar Island, it is satisfactory to note that more cases are voluntarily attending for treatment each year. Preventive and curative measures to reach the mass of the population are however urgently necessary.

It is estimated that of the native population about 10 per cent. are infected wih Ascaris and 90 to 100 per cent. with T. Dispar. Cestoda appear less common than on the mainland; only one case attended for treatment during the past year and ova were found in less then 1 per cent. of stool examinations. Of the 130 cases of Bilharzia 74 were reported from Pemba and 57 from Zanzibar. The examination of a large number of snails collected from both islands was undertaken during the year but failed to incriminate any of the species discovered. Most, if not all, of the patients had resided for varying periods on the mainland and many of them undoubtedly contracted the disease outside the Protectorate. There appears however little doubt that endemic centres exist in Pemba and probably also in Zanzibar Island and further investigations are being undertaken.

Elephantiasis.—One hundred and fifty-three cases were recorded in 1923 as compared with 130 in 1922 and 117 in 1921. Of last year's cases 90 were reported from Pemba and 63 from Zanzibar Island.

3. LOCAL DISEASES.

The greater proportion of these is included under :—

Respiratory Diseases	...	3,841	cases.
Digestive ,,	...	7,536	,,
Skin ,,	...	5,366	,,
Myalgia	...	1,334	,,

B. EUROPEAN OFFICIALS.

During the past year 369 cases of illness were recorded among the European Officials and for 123 of these the patients were placed off duty.

Two deaths occurred due to Blackwater Fever, and one official died from Cerebral Hæmorrhage while on the voyage to England after being invalided for Arterio-Sclerosis.

The principal causes of illness were :—

Dysentery	1	Undefined Fever	7
Enteric	1	Debility	27
Influenza	7	Arterio-Sclerosis	1
Malaria	26	Respiratory Diseases	27
Blackwater Fever	2	Digestive ,,	112
Tuberculosis	2	Injuries	21

Table showing the Sick, Invaliding and Death Rates of European Officials for **1923** :—

Total number of officials resident	112
Average number resident	76
Total number on sick list	123
Total number of days on sick list	487
Average daily number on sick list	1.33
Percentage of sick to average number resident	1.75
Average number of days on sick list for each patient	3.96
Average sick time to each resident	6.41
Total number invalided	5.00
Percentage of invalidings to total number resident	4.46
Percentage of invalidings to average number resident	6.58
Total deaths	3.00
Percentage of deaths to total residents	2.68
Percentage of deaths to average number resident	3.95

The above statistics are only approximately accurate, as owing to shortage of staff complete records were kept for only part of the year.

Medical Boards.—Medical Boards were held on five Officials and recommendations were made as follows :—

(*a*) To be permanently invalided ... 1
General Debility.
(*b*) To proceed on leave for further treatment and examination prior to return to the Protectorate ... 4
Tuberculosis
Arterio-Sclerosis *
Pharyngeal Congestion.
Para-typhoid

C. ASIATIC OFFICIALS.

No Asiatic Official died during the year, but five were permanently invalided for the following causes :—

Asthma	1	General Debility	2
Tuberculosis	1	Senile Debility	1

Ninety-seven cases were admitted to hospital, as compared with 83 cases with two deaths in 1922 and 67 cases with two deaths in 1921.

The principal illnesses for which Asiatic Officials were admitted to hospital were as follows :—

Influenza	6	Tuberculosis	1
Malaria	48	Respiratory Diseases	5
Blackwater Fever	2	Digestive ,,	8

---

* Died of Cerebral Hæmorrhage on the voyage home.

D. GENERAL EUROPEAN POPULATION.

The total number of Europeans (officials and non-officials) treated at Government Hospitals and Dispensaries was 569 with three deaths as compared with 362 with one death in 1922.

The principal causes of illness were :—

Influenza ...	21
Malaria ...	49
Undefined Fever ...	15
Debility ...	32
Neuralgia ...	14
Conjunctivitis ...	6
Respiratory Diseases ...	40
Digestive Diseases ...	169
Skin Diseases ...	54
Injuries ...	25

Deaths.—In addition to the three deaths recorded above, four deaths were reported by private practitioners, making during the year a total of seven deaths throughout the whole Protectorate. The causes were registered as follows :—

Blackwater Fever ...	2
Self-Inflicted Wound ...	1
Gastric Ulcer ...	1
Appendicitis ...	1
Influenza ...	1
Chronic Alcoholism ...	1

Births.—Seven occurred during the year.

E. GENERAL NATIVE POPULATION.

Vital Statistics.

The last census taken in 1910 showed the total population of Zanzibar Island as 113,624 and that of Pemba as 83,109 making a total for the whole Protectorate of 196,733.

Births and Deaths Returns.—The registration of births and deaths is compulsory, but cannot be considered reliable. The returns for the whole Protectorate for the past year record 3,189 births and 4,743 deaths; of these 2,035 births and 3,454 deaths were returned from Zanzibar Island, and 1,154 births and 1,289 deaths from Pemba Island.

TABLE A.

The following table compares these figures with those of the previous two years :—

ZANZIBAR ISLAND.	1921	1922.	1923.
Births	2,591	2,658	2,035
Deaths	3,261	3,457	3,454
PEMBA ISLAND.			
Births	1,671	1,667	1,154
Deaths	1,358	1,216	1,289
TOTALS.			
Births	4,262	4,325	3,189
Deaths	4,619	4,673	4,743
Excess of Deaths over Births.	357	248	1,554

Only live births are included in the above figures; no statistics are at present obtainable with regard to the number of dead births or infantile mortality.

It will be observed that as in each of the previous years the number of deaths recorded exceeds the number of births, but whereas the excess for 1921 and 1922 was 357 and 248 respectively, it has now increased to 1,554. As compared with the two previous years the deaths have increased by about 100 and the births decreased by more than 1,100. It is therefore obvious that the disparity must be due to either incomplete birth returns or to a serious diminution of the birth rate.

After full enquiry the conclusion arrived at is that the apparent diminution in Pemba can be accounted for by incomplete birth returns, but for Zanzibar Island the figures are considered approximately correct. The following table records the birth and death returns of Zanzibar Town and District Areas for the past ten years.

TABLE B.

Table showing the number of births and deaths registered in Zanzibar Island 1914-1923.

	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.
Town Area.										
Births	401	332	296	305	418	341	473	479	481	413
Deaths	1,317	1,008	1.168	1,255	1,359	1,180	1.083	1.076	1,262	1,258
Districts.										
Births	946	1,907	2,058	2,381	1,793	1,435	2,713	2,112	2,177	1,622
Deaths	1,821	2,212	2,089	2.235	2,515	1,983	1,958	2,185	2,195	2,196
Excess of Deaths over Births.	1,791	781	903	804	1,663	1,383	145	670	799	1,419

No census has been taken since 1910, but a rough estimate of the population is 38,000 for Zanzibar Township and 88,000 for the District Areas in Zanzibar Island. Based upon these figures the Birth and Death Rates per 1,000 would be as follows :—

	Birth Rate.	Death Rate.
Zanzibar Township Area ...	10.9	33.1
District Area (Zanzibar Island) ...	18.4	25.0

The smaller Birth Rate in the Town Area is thought to be due to the fact that many women leave the town for the district prior to confinement.

It will be seen from Table B that there has been little alteration in the number of deaths, and that the large increase in deaths over births last year, as compared with the three preceding years, is due to the decreased number of births. This decrease the natives themselves ascribe to a drought and scarcity of food.

Although the figures recorded can be taken as only approximately correct, there appears to be no doubt that a serious diminution in population would be obvious but for the constant immigration of mainland natives. Last year the number of immigrants into the Protectorate of all nationalities exceeded the emigrants by 3,798, and deduction from this figure of 1,554 (the excess of deaths over births registered) leaves an increase for the year of 2,244 in the total population. Most of the births recorded occur among the recent immigrants and the remnants of the old native population, while those occurring among the large mass of the population consisting of Swahilis and the descendants of slaves are almost negligible. The cause of this infertility among the last named has not so far been determined.

Venereal disease does not appear to be a factor of such great importance as in Central Africa. Tuberculosis, undoubtedly much more common than indicated by the hospital statisics, must tell to some extent on the birth rate, especially in the town of Zanzibar. The lowered vitality of the inhabitants, due to the prevalence of Ankylostomiasis and Malaria throughout the Protectorate is also an important factor, but does not account for the inequality in the number of births among the different sections of the population.

Every endeavour will be made to discover and remove the cause or causes, and the establishment of numerous district dispensaries ought to be of great assistance towards this end. During the coming year, the Zanzibar Maternity Association proposes to open a Maternity Home in the native quarter of the town in charge of a trained nurse in full sympathy with the natives and with a knowledge of their customs and language. The nurse will visit patients in their homes to advise on all matters connected with maternity and child welfare, and it is hoped that valuable information may thus be obtained to indicate in what directions further measures are most necessary.

SECTION III.

SANITATION.

A. General Review of the Work Done.

1. *Administration.*

(1) *Staff.*—Dr. B. Spearman, Senior Medical Officer of Health, proceeded on leave on the 7th March and was absent from the Protectorate for the remainder of the year.

Dr. H. C. E. Quin, Assistant Medical Officer of Health, acted as Medical Officer of Health from 7th March to the end of the year.

Mr. P. Cairns, Sanitary Superintendent, arrived on appointment 9th December on transfer from Kenya Colony.

(2) *Legislation.*—

(1) *Amendment No. 13 to the Public Health Decree.*—This amendment generally increases the stringency of the law bearing on the breeding of mosquitoes, more particularly in lengthening the period from 20 days to three months during which a person is liable to prosecution on account of harbouring larvæ a second time.

(2) *Amendment No. 15 to the Public Health Decree.*—This extends the rules governing the slaughter of animals to the Townships of Weti and Chake Chake or any other place where a slaughter-house may be opened.

(3) *Additional Rules under the Public Health Decree. Dated 18th June, 1923.*—This empowers the Veterinary Officer to depute any or part of his duties to another person, subject to sanction of of the Medical Officer of Health.

(4) *Decree to prevent the Introduction and Spread of Disease among Animals, No. 14 of 1923.*—This is legislation to prevent the introduction of diseases of animals, whether affecting human beings or not.

2. *Preventive Measures.*

(1) *Mosquito and Insect-Borne Diseases.*—The most noteworthy achievement in this direction during the year was the drainage carried out at Gulioni and Ziwani. In these two notoriously malarial areas upwards of 1,200 yards of cement agricultural drains have been laid; the swampy areas on each side of the aqueduct at the former place and the region to the west of the officers' quarters at the latter, have thus been greatly improved, while the water-hole which served the neighbouring native huts has been replaced by a covered concrete well. The adjoining vegetable gardens, however, retain extensive pools of water in wet weather, hence it is proposed to acquire them for the purpose of necessary levelling. In Ziwani swamp, the lateral earth drains cut many years ago to discharge into the existing cement drain had, through constant deepening and cleansing, sunk below the invert of the latter, with the result that they had become aquaria for larvæ throughout the year; they were therefore filled in and obliterated.

The sullage-pits in the town have repeatedly been mentioned by Health Officers as propagating Culex, and the uneven and blocked rainwater gutters which offer hospitality for egg deposition should be abolished; possible damage to road surfaces and moistening of pedestrians are less pernicious consequences and easier to remedy.

The mosquito brigades consist of five inspectors and nine "boys" for the Town proper and two inspectors and six "boys" for

Ngambo. Re-organisation of this work is taking place and the responsibility for mosquito prevention will be in the hands of the Economic Biologist. A special swamp-drainage gang has also been taken over from the Public Works Department, their duty being to clean and keep in good order the system of surface drains on the outskirts of the town.

(2) *Infectious or Epidemic Diseases.*

Small Pox.—Only 70 cases of Small-Pox, 29 of whom came from the native quarters and one from the town proper, were admitted to the Infectious Diseases Hospital, as compared with 124 in 1922. Fifty-three contacts were also cared for. The cases were very severe and the mortality reached 50 per cent.

A considerable epidemic unfortunately occurred in the Mkokotoni District. The disease was carried into the district by a Kikuyu labourer of whom nothing was known except that he came from the town of Zanzibar and died of Small-Pox at Chutama on 27th August. This case illustrates a serious difficulty in the path of the Public Health Officials, due to the constant immigration of labourers of a vagrant type from mainland ports only a few hours away. Between August 27th and November 15th 131 cases were reported or discovered, of whom 21 died. Thus in September 87 cases, in October 39, and in November four cases were notified. The measures employed to combat the epidemic were segregation of infected villages, the closing of schools and coffee-shops, the prohibition of "ngomas" and the regulation of public vehicles, markets, gatherings and dhow-traffic. A makuti "Hospital" was erected at Mkwajuni, to which 23 cases (three proving fatal) with 34 contacts were admitted. Three attendants from the Infectious Diseases Hospital were posted to this improvised institution, while two vaccinators were sent into the district, the Sanitary Sub-Inspector also sharing in this work. A Sub-Assistant Surgeon was stationed at Mfenesini on the southern boundary of the district to inspect, and if necessary, vaccinate all persons coming by the main road towards Zanzibar, while the Acting Medical Officer of Health visited and stayed in the district frequently. A good deal of opposition was offered to these measures, maulidi (religious feasts) and funerals were specially difficult to control—the latter on account of the free meals offered to the numerous and until then unsuspected relatives who present themselves as mourners—while the weakness of the Vaccination Decree became very evident, but success was attained by the energetic assistance of the local District Officer.

TABLE C.

Table showing the distribution of cases of Small-Pox in the Zanzibar Protectorate during 1923.

IN ZANZIBAR ISLAND.		
On Steamers and Dhows in Harbour	6	
Town Districts	35	
Mwera District	19	
Chwaka District	12	
Mkokotoni District	131	
Total	203	203
IN PEMBA ISLAND.		
Weti District	16	
Chake Chake District	1	
Mkoani District	16	
Total	33	33
Grand Total		236

Vaccination.—In Zanzibar Island 25,299 and in Pemba Island 17,964 persons were vaccinated during the year, making a total of 43,263 for the whole Protectorate.

TABLE D.

Table showing the Number of Persons vaccinated during the year 1923.

I—IN ZANZIBAR ISLAND.

Months.	Town.	Steam-ship.	Dhows.	Quarantine Stations.	Mwera.	Chwaka.	Mkokotoni.	Total.
January	508	6	794	—	—	—	54	1,362
February	420	22	900	—	—	284	54	1,680
March	1,437	5	1,005	—	—	447	203	3,097
April	731	65	669	—	—	—	185	1,650
May	711	90	533	—	—	—	289	1,623
June	891	—	628	—	—	—	202	1,721
July	864	10	375	—	—	—	608	1,857
August	1,229	35	374	—	—	97	77	1,812
September	911	37	546	—	—	—	2,799	4,293
October	972	117	611	—	—	—	1,372	3,072
November	914	24	447	—	—	—	252	1,637
December	845	18	500	—	—	—	132	1,495
Total	10,433	429	7,382	—	—	828	6.227	25,299

II—IN PEMBA ISLAND.

Weti District	9,702
Chake Chake District	2,777
Mkoani District	5,485

Note:—Of 10,433 vacinations performed in the Township 7,570 were Positive, 2,778 Negative and 85 Unknown. The exact result of the vaccinations performed in the Districts could not be ascertained, but it is believed that over 50 per cent. proved Positive.

Chicken-Pox.—There was a considerable prevalence of this disease, 18 cases of which were admitted to Hospital. No deaths.

Measles.—Eleven cases were admitted. No deaths.

Plague.—No case occurred and no infected rats were found.

Leprosy.—Five cases were segregated in an out-building in the grounds of the Infectious Diseases Hospital; one of these escaped and four were transferred to Funzi Island. A special building in a more isolated situation has been sanctioned for the purpose of temporarily housing such cases. Arrangements have also been made with the Commandant of Police to have lepers conducted to Zanzibar, if possible only on the day when the steamer sails for Pemba. In all, five cases were transferred from Zanzibar Island to Funzi during the year.

Enteric Fever.—One death from this disease was notified by a private practitioner.

Paratyphoid B.—Two cases agglutinating positively occurred, one a European official, the other a Japanese. Both recovered.

Tuberculosis Pulmonary.—Thirty deaths from this cause were notified by qualified practitioners and 155 were so ascribed by unqualified persons.

Dysentery.—Thirteen deaths were reported, nine by unqualified persons. Entamoeba histolytica was diagnosed on nine occasions in the Laboratory and B. Shiga once.

Influenza.—Two deaths from this cause were certified by qualified practitioners.

Tetanus.—Two deaths, one a native and the other an Indian, occurred from this disease.

3. *Helminthic Diseases.*

Ankylostomiasis.—The prevalence of this disease has been a subject of recurring comment in these reports. Exact statistics for the whole Protectorate are not available, but nearly 50 per cent. of all the stools examined in the Laboratory were found infected. The economic loss caused by this parasite in reducing labour output must be enormous. Zanzibar, it is hoped, will join the world-wide movement, largely due to the Rockfeller Foundation, which is now making a comprehensive and determined effort to eliminate this wide-spread disease. The general lines to be followed in the campaign would roughly be—Estimation of the number infected; Estimation of the degree, heavy or light, of the infection; Mass treatment; Propaganda—simple lectures with lantern pictures, and provision of latrines designed to prevent infestation of the surface. For this purpose a concrete latrine platform sloping towards the slot, cut with a deepening slope for $^2/_5$ of its length, the whole platform being surrounded by a low coping, has been designed. The Public Works Department now makes and keeps a stock of these platforms, which can be purchased cheaply. In view of the economic gain to be derived from even a notable diminution of this disease, it is worth considering whether they could not profitably be given gratuitously or, at any rate, at under cost price to the poorer inhabitants. If an autocrat with unlimited resources arose to supply gratis and compel the universal wearing of boots, even the convinced democrat might temporarily waive his objections. The Economic Biologist carried out a series of experiments during the year, with the object of determining the degree of infestation of the soil in the vicinity of native choo-pits, the average length of survival of larvæ in moist soil and the extent to which they can migrate. His results will be published later.

In Carbon Tetrachloride it seems that a cheap and most efficient treatment is now available, which has the advantage that little preliminary preparation of the patient by purgation and fasting is necessary.

3. *General Measures.*

(*a*) WATER SUPPLY.

In July the new water supply from springs at Bu-Bu-Bu, seven miles from the town, was opened. This supply is abundant in quantity and was shown by frequent chemical and bacteriological examinations to be of excellent quality generally, but during heavy rains it is found that B. Coli appears in less than 50 cc. In only two of the town houses is the pressure sufficient to raise the water to upper storeys, and it is hoped that in the future a water-tower with pumps will be esablished so that upper floors may have water laid on. The new supply, with the existing system derived from the Chem-Chem springs, puts Zanzibar in a very favourable position, but until stand-pipes in sufficient number are installed the remaining wells, which are all polluted, cannot be closed.

(*b*) DRAINAGE.

In some previous reports the opinion will be found that the considerable rise and fall of the tide at Shangani (more than 20 feet) offers the means of providing the town with a sewerage system, the sewage to be stored and discharged at half-ebb. As has often been said, the town rests on a sewage-saturated sponge due to the myriad cess-pits; this method has tolerably well served for many years, but it cannot go on for ever and in fact, in a town situated on the sea with such a tidal difference, it should be looked on as a confession of sanitary helplessness. Wells are polluted and pipe-lines threatened if any pin-holes or defective joints should appear. Certain parts of the town —Shangani and Vuga—lend themselves to sewerage, but it must be admitted that at present the laying of such a system in the tortuous narrow streets of the Bazaar is not feasible, nevertheless, systematic town planning and clearing, which must come sooner or later, will give the opportunity for a comprehensive scheme. The argument that the Bazaar resident could never be entrusted with water-flushing sanitation need not be considered, as it implies that things must remain in *statu quo* for ever; he has been taught elsewhere and he will habituate himself very soon as, for example, in the new Government School. Here the impermeable cesspit originally installed will soon be replaced by trough-closets automatically flushed and drained to the Creek, and recently, an applicant who desired to erect some dwellings towards the sea-ward end of the Creek was persuaded, after a little surprised hesitation, to undertake the installation of water-closets. The choo in the Bazaar house is usually a noisome horror, placed practically in the same compartment as the kitchen, haunted by enormous cockroaches and plunged in darkness—but the visual sense is unnecessary in discovering it—while an excreta-coated conduit inside the house leads to the choo-pit below.

(*c*) REFUSE REMOVAL AND DISPOSAL.

Table IV shows the number of cartloads of refuse collected by the Health Office sweepers. Ordinarily the destination of this refuse is the Destructor, but occasionally through the latter being closed for repairs or owing to heavy rain, when it cannot consume fast enough the wet material brought to it, it is necessary to resort to dumping in hollows which are known to be breeding places of mosquitoes in the rains. A small Horsefall destructor has also been placed at Kikwajuni.

It is a question whether the street refuse-bins are not a source of nuisance through abuse. The site on which such a bin stands becomes recognised as a spot on which the most revolting refuse may be dumped, and the small boxes usually placed beside it for overflow are quickly over-filled and frequently stolen.

A modern Refuse Destructor has been sanctioned, the site chosen being at Kokoni near the Railway Embankment. The disadvantage of the present site at Darajani, viz., too close proximity to the markets and consequent fly invasion, will here be overcome

(*d*) HOUSING.

Sites for building being scarce, the tendency is to build more and more upper storeys of flimsy material and corrugated iron on existing houses, so that the narrow streets are almost roofed over by projecting eaves and resemble mere chinks between precipitous walls from which the sunlight is excluded. Only a few houses, chiefly European, have a water supply on the upper floors, the water being pumped up by hand to a cistern, and in this deficiency may perhaps be found some palliation for the gross neglect of cleanliness visible among the Bazaar residents. The steady disappearance of the flat roof, as pointed out by Dr. Spurrier in his Report for 1909, is a real loss to health, for it was on it that the family took the air, and bedding and clothing were exposed to the purifying action of the sun. It may be unfortunate that a considerable area of the town is occupied by graveyards when sites for building are so badly needed, but they are at any rate open spaces which would probably not otherwise exist; the owners of land invariably aim at building up to the last inch of their plots and much cunning is displayed in evading the Building Regulations. A Town Planning Scheme is believed to be under consideration and therefore at present little can be usefully said on the Housing question, but, to acquire some definite information as a partial basis for a study of the problem, an investigation was made in 1923 of the conditions in which the inhabitants of "gurfas" or tenement houses live. For this purpose a questionnaire was drawn up and an intelligent Sanitary Inspector told off for this special duty.

The salient points of the information so gathered may be briefly summarised as follows:—

Number of gurfas investigated ...	44
Number of residents ...	1,542
Number of actual living rooms ...	601
Number with animals, goats and fowls on premises ...	7
Number where occupations or industries carried on ...	34
Gurfas in bad repair ...	31
Number with water-tap on premises ...	4
Average distance of remainder from hydrant ...	275 yards
Rooms occupied by four or more persons ...	154
Rooms without a window ...	41
Rooms with only one window ...	261

The number of rooms used as living-rooms compared with the number of residents may seem reasonable at first, but the expression "room" in a very large number of cases is a courtesy title; the partitions are only ceiling planks or decrepit sheets of corrugated iron, and the same materials serve as boundaries for the choos which mostly adjoin the dwelling-rooms and kitchens.

Native Huts.—Through the greater part of the native quarters these are built haphazard without alignment and on no systematic plan regarding streets and spaces between adjacent huts. The makuti eaves intermingle so that a fire starting in one hut rapidly entails widespread disaster. Latterly, however, due alignment has been more strictly required, and proposals will be made to introduce a uniform system providing for streets, spaces between houses, sanitary lanes at the back, and a compound containing a kitchen, bath, and choo, the latter to be at a suitable distance from the dwelling. Few of the huts are at present furnished with choos, the natives resorting to any convenient space and so propagating Hook-worm disease.

Under "Housing" a few remarks may also be suitably made as to the keeping of animals in the town. A census made during the year showed that about 44 bovines and nearly 2,000 goats, together with a certain number of camels, mules, and donkeys live in the most insanitary areas of the town. The cattle, chiefly milch cows, with the removal of which from the town proper a beginning has at last been made, are dealt with under another heading, but the goats continue to offer the same venerable problem as of yore. Health Officers have always found themselves between the conflicting claims of sanitation and of a cheap and good food-supply, because goats' milk is only one-fourth of the price of cows' milk and a dangerous deprivation would be exacted of the very poor by enforcing the admirable regulations which exist on paper. If the goats are not allowed to enliven the streets in search of a living, they will live on or under beds in the houses—spaces and means to house them to the satisfaction of the sanitarian do not exist. Accordingly, a proposal has been put forward to utilise the reclaimed ground near the Refuse Destructor, which has the advantage of being near enough for the owners to attend for feeding and milking the animals (while it could not for many years be used for human dwellings), as a fenced-in territory for the town goats. Plans for sanitary pens with impermeable floors draining to the adjacent Creek have been prepared by the Sanitary Superintendent. At the same time, regulations for licensing, control, limitation of numbers, etc., have been suggested with the object that gradually only the goats housed in these pens, for which a rent would be paid to the Government, should remain.

(*e*) POLICE LINES.

The latrine accommodation at the Ziwani cantonment, when taken over by the police, proved to be quite insufficient for the increased population and two temporary latrines of the pit type were constructed. This camp is being enlarged by new lines, and permanent latrines in sufficient quantity are being provided.

The sanitary condition of the police quarters at Mwera and Chwaka was found to be deplorably bad and new latrines, one each for men and women, with concrete platforms, have been constructed A bee-hive incinerator has also been provided for each station, and at Chwaka a sullage-pit with concrete cover has replaced the open mosquito-breeding pit adjoining the prison.

(*f*) SLAUGHTER-HOUSE.

The new Slaughter-House at Gulioni was opened in July. This is a well-designed, sanitary structure with pens for large and for small animals, mechanical hoists, tripery, meat-inspection apartments, boiler, office for Veterinary Officer, abundant water supply and drainage to the Creek, blood and washings being discharged from a tank on the ebb-tide. With a few improvements which are now under way, this building may be considered entirely satisfactory, but the method of conveying the meat to the market is primitive, and to remove this blemish from a good work, a motor-lorry with hooks and protected with wire-gauze, should be added to the service.

(*g*) COW-SHEDS AND DAIRIES.

About 400 cattle have hitherto been housed in the most insanitary parts of the town under conditions which were deleterious to the animals and made the production of clean milk impossible; the sheds being dilapidated, dark, grimy, mostly undrained, and often in the ground floors of dwellings. At the time of writing, about a hundred of these animals have been removed to the Government Model Sheds at Mji Mpia, the whole of the accommodation being occupied, while applicants are numerous for the next sheds to be constructed—a gratifying circumstance, since it was apprehended that more or less pressure would have to be employed to induce the cow-owners to vacate the town proper. This change is an important one from the point of view of Town Sanitation and will have an important effect on the purity of the milk supply.

4. *Poor and Leper Asylums.*

WALEZO POOR ASYLUM.

The following table shows the number of paupers treated during 1923 at the Walezo Poor House, which remains under the care of the Roman Catholic Mission.

TABLE E.

Particulars.	Males	Females.	Total
Remaining on 1st January, 1923	33	41	74
Admitted during the year	152	58	210
Died	39	31	70
Discharged	113	27	140
Remaining on 31st December, 1923	33	41	74

LEPER ASYLUMS.

In January, 1923, the Zanzibar Lepers, who had till then been in the care of the Roman Catholic Sisters, were removed from Walezo to Funzi Island, Pemba, where it is intended to concentrate the Lepers of the Protectorate, all newly discovered cases being sent there.

The Island is visited regularly by the Medical Officer stationed at Weti, who has also an experienced Leper Attendant under his orders, while supplies are sent monthly from the Health Office, Zanzibar, *via* Weti. The lepers organise their own life under a Headman who accompanied them from Walezo. The huts, constructed at first of *makuti*, do not offer sufficient resistance to the weather, and a new settlement of more substantial buildings is required. A good well, yielding a satisfactory supply of water has been sunk.

The following tables give statistics of Funzi Island and the three settlements in Pemba.

TABLE F.

Table showing Lepers remaining on 31st December, 1923, in each of the Four Settlements.

Settlement.	Males.	Females.	Total.
Funzi	27	37	64
Nduni	17	13	30
Pujini	25	22	47
Kengeja	12	13	25
Total in four Settlements	81	85	166

To the above must be added the small leper settlement at Fufuni consisting of six voluntarily segregated lepers mentioned as recently discovered in the Pemba Report.

TABLE G.

Funzi Leper Settlement, Pemba.

Particulars.	Males.	Females.	Total.
Remaining on 1st January, 1923 ...	31	44	75
Admitted during the year ...	19	12	31
Died ,, ,, ,, ...	15	21	36
Discharged ,, ,, ,, ...	1	1	2
Escaped ,, ,, ,, ...	3	1	4
Remaining on 31st December, 1923 ...	27	37	64

5. *Port Quarantine Service.*

In 1923 two mail steamers from Bombay arrived in quarantine with Small-Pox—the s.s. "Karagola" in May and the s.s. "Khandalla" in December.

In August, mortality from Plague among rats, followed by human cases, was notified from Mombasa Harbour area. It was decided accordingly to claytonise the holds of all ships arriving in Zanzibar containing cargo from Kilindini, the holds being kept sealed for twelve hours subsequently to the requisite percentage of gas having being attained. Thirty-four steamers were so treated during the months of August, September, October and November. Dhows from Kilindini were ordered to anchor to the north of the customary anchorage and to keep the usual Quarantine signals displayed day and night, while their passengers were landed under surveillance.

The work of the Port Medical Service will be made more anxious on the completion of the Harbour Works, when ships will be moored to the quay and rats will have more easy access to the town. Further, an attempt should be made to limit the heavy importation of dirt, lice, and contagious skin diseases brought by dhow traffic in the north-east monsoon and steamers from India. With this view, when submitting the programme for new works for the coming year, it was proposed that a cleansing and delousing station should be established in a special Immigration Area at the Docks, with shower-baths and steam-disinfectors, and an outline was given of the system of control and management required to attain its object.

The subjoined tables give statistics of the Port Sanitary and Quarantine Services.

TABLE H.

Return of persons quarantined during **1923**.

	Remaining	Admitted	TOTAL	Discharged	Died	Remaining	Largest No. on one day	No. of days station occupied	Remarks.
January ...	...	.	...	...	...	...	...		
May ...	...	548	548	...	...	548	548	16 days	s.s. "Karagola"
June ...	548	..	...	548	...	...	548		
September ...	...	19	19	19	...	...	19		Dhow
October ...	...	20	20	20	...	...	20		Dhow
December ...	...	421	421	56	...	365	421	16 days	s.s. "Khandalla"
Total ...	...	1,008	1,008	643	...	365	...		

TABLE J.

Port Sanitation Return, 1923.

	Arrivals			Ships quarantined	Ships claytonised	Passengers landed	Passengers under surveillance	Number of persons vaccinated	Persons placed in quarantine
	British	Foreign	Total						
Steamers									
January ..	30	8	38	..	..	1544	4	..	..
February ..	33	10	43	..	..	1983	2	..	..
March ..	38	9	47	..	..	2158	59	..	..
April ..	21	11	32	..	..	1880	193	..	..
May ..	23	9	32	1	1	2056	..	..	548
June ..	28	10	38	..	..	1820	..	..	..
July ..	22	10	32	..	..	1447	38	..	..
August ..	20	11	31	..	4	1431	..	..	..
September ..	22	10	32	..	12	1317	..	..	..
October ..	20	9	29	..	13	1205	..	..	..
November ..	22	11	33	..	5	1457	..	..	..
December ..	21	9	30	1	1	2336	29	..	421
Men of War ..	4	..	4	..	..	..	..	..	..
Total ..	304	117	421	2	36	20634	325	..	969
Total for 1921 ..	351	102	453	..	..	19711	1443	..	6
Dhows—									
January ..	114	47	161	..	..	10 0	..	794	..
February ..	222	72	294	..	..	965	..	900	..
March ..	154	135	239	..	..	1117	..	1005	..
April ..	85	33	118	..	..	679	..	669	..
May ..	70	11	81	..	..	624	..	533	..
June ..	136	4	140	..	..	682	..	628	..
July ..	114	5	119	..	..	418	..	375	..
August ..	98	11	109	..	..	474	..	374	..
September ..	111	6	117	2	2	551	..	546	19
October ..	116	3	119	2	2	620	..	611	20
November ..	120	4	124	..	..	469	..	447	..
December ..	120	13	133	..	..	524	..	500	..
Total ..	1460	344	1804	4	4	8123	..	7382	39
Total for 1922 ..	1395	417	1813	3	3	7351	112	13083	46

6. *School Medical Service.*

(a) GENERAL REMARKS.

Although the number of pupils medically examined during 1923 is less than in 1922—541 against 619—owing to the entire charge of the Public Health Division having devolved upon the Assistant Medical Officer of Health, it is nevertheless gratifying to be able to record two noteworthy advances in the School Medical Service. In the first place, to the public spirited generosity of the Wakf Commissioners is due the building designed by Mr. P. C. Harris, of a School Clinic to be handed over to the Government adequately equipped and ready for its functions. It is now approaching completion and comprises waiting-hall, a room for ophthalmic work, a room for examination and treatment of ordinary cases, another for verminous and septic cases and contagious skin diseases, two shower-baths and a w.c. Here, at least, Zanzibar may now come into line with advanced Western countries, and acquire a modest priority over neighbouring Colonies and Protectorates, in one of the most important departments of social hygiene.

In the second place, the omission of Girls' Schools from the operations of the School Medical Service, which was regretted in last year's Report, has now been rectified and in 1923 for the first time, the School Medical Officer was able to enter a Moslem Girls' School in Zanzibar in order to investigate and advise on the physical defects and ailments discovered. If this may, without exaggeration, be described as an advance, a word of recognition is due to the Shia Ismailia Khoja Council who, on the purpose and scope of the medical surveillance of school children being explained to them, promptly threw open the doors of their schools. The Bohora community are ready to welcome periodical examinations of the pupils, in their mixed school—the term is in itself an indication of progress—but the little girls of the Ithnasheri sect will, it seems, have to wait until a later date, as the leaders of this community, while accepting a somewhat less Draconian rubric for themselves, prefer to regard a female child of ten as in every respect qualified to take up her burden of seclusion and service.

There are approximately 700 girls on the books of the various schools in Zanzibar town, of whom 300 were examined in 1923,

(*b*) EXAMINATION OF PUPILS.

The pupils examined were distributed as follows :—

	Indians.	Arabs.	Swahilis.	Others.*
Government Central School	15	33	28	15
Sir Euan Smith Madressa	60	—	—	—
Ismailia Khoja Girls' School	300	—	—	—
Totals	375	33	28	15

* Comorians, Persians, Somalis, etc.

The following Table shows the defects discovered :—

TABLE K.

	Indians.		Arabs.	Swahilis.	Others.
	Boys.	Girls.	Boys.	Boys.	Boys.
Number examined	75	300	33	28	15
Nutrition Defective	7	14	2	2	—
Cleanliness—Skin Disease	6	13	3	4	—
Head Nits	8	105	1	—	—
Body Dirty	16	73	3	—	2
Vaccination—Unvaccinated	—	54	1	2	—
Teeth Defective	4	18	3	3	1
Nose and Throat	3	10	2	—	—
Tonsils	7	24	2	—	1
Adenoids	3	9	3	1	1
External Eye Disease	2	6	1	—	1
Vision—Defective	15	29	2	2	—
Ear Disease	2	—	—	—	—
Hearing Defective	11	28	1	1	—
Speech Defective	2	4	—	—	—
Mental Condition	—	1	—	—	—
Heart and Circulation	11	16	2	1	2
Lungs	10	40	5	—	—
Nervous System	—	—	—	—	—
Rickets	2	5	2	—	—
Deformities	3	4	2	—	—
Lymphatic Glands	3	5	5	2	—
Spleen Enlarged	11	42	14	4	5
Other Disease or Defect	—	6	—	1	1
Blood—M.P. present	10	19	7	4	6

Below are some explanatory notes on this table :—

(1) Nose and Throat Diseases include Nasal Obstruction, Pharyngitis, Adherent Uvula and Naso-Pharyngeal Catarrh.

(2) External Eye Diseases found were Chronic, Simple and Follicular Conjunctivitis, Hordeum, Leucoma, and Phlyctenular Keratitis.

(3) Skin Diseases were Scabies, Impetigo, Seborrhœa, Acne, Tinea, and Eczema.

(4) Under Other Disease or Defect were noted Congenital Torticollis, Osteomyelitis, Keloid, Goitre, Papilloma of Tongue, Jiggers, and one case of Gleet in a boy.

(5) Among Deformities were Pigeon Breast, Old Hydrocephalus, Pott's Curvature, and Epicanthus.

(6) Defects of Speech were Stammering, Slurring, and two cases of Dumbness in girls.

(7) Defects of Hearing ranged from moderate dullness and unilateral deafness to total deafness in a girl. It was interesting to find one little deaf and dumb girl remarkably bright mentally.

(8) One case of complete Amentia was found in a little girl.

(9) Diseases of the Heart and Circulation were for the most part marked Anæmia, of which there were eleven examples in 151 boys against 15 in 300 girls. Five cases of organic disease were found, four of them in boys.

(10) The high incidence of respiratory affections among Indian boys, which was commented upon last year, is again noticeable in the present return, while it has unfortunately to be recorded that the girls reveal a similar prevalence. The polluted air of their unventilated homes, unsuitable clothing, and meagre nutriment are the causes.

(11) Defective Vision.—It will be noted that this defect is only half as prevalent among Indian girls as among boys who, as last year, have 20 per cent. defective. Pupils of the other races examined this year are too few to permit of generalisation. Little or nothing is done at present to treat this disability, partly because of the want of means of estimating refractions correctly and partly because the high price of glasses obtained locally debars poor children from obtaining such relief, but the Clinic will provide the School Medical Officer with the necessary facilities, and in connection with it arrangements will be made to supply glasses at cost price or, in certain cases, free.

(12) Malarial Infection.—The Arabs again show a preponderance of infection, having 42 per cent. with Enlarged Spleen and 21 per cent. with parasites in their blood, these figures being higher than last year, while the Swahilis and others also show an increase, though admittedly the number of pupils dealt with is smaller. The rate for Indian boys is also slightly higher, while girls, coming under review for the first time, have the same spleen rate as their brothers but less than half as much parasitæmia.

(13) Cleanliness.—In this respect one has again to point out with regret the humiliating position which Indian children, boys and girls, are allowed to occupy. The latter especially are bright, gentle and attractive children, and it is doubly deplorable that they should be abandoned to dirt and vermin and the foundation of their self-respect undermined because their parents are negligent or ignorant. The proof that this reproach can readily be removed lies to hand, inasmuch as a re-inspection of some of these little girls this year revealed a surprising improvement, and the simple explanation forthcoming was that marks are now awarded at school for cleanliness and parents have been so informed.

(14) Hook Worm Disease, Bilharziasis and Filariasis.—It was hoped to carry out an investigation into the prevalence of these infections among school children, but the absence on leave of the Senior Medical Officer of Health and the Senior Laboratory Assistant for several months excluded the undertaking of any extra work.

(15) Vaccination.—Fifty-three vaccinations were performed at the Government Central School and 47 at the Ismailia Khoja Girls' School.

(16) Growth and Nutrition.—Last year a table was given showing the average height and weight of school boys of the principal races in different age-groups, together with a further column giving British elementary school boys, hence—and for the reason then stated—it may be of interest on this occasion to offer a parallel table for girls:—

Table L.

Height in inches and Weight in pounds.

Age Group	Indians.		British.	
	Height.	Weight.	Height.	Weight.
6- 8 years	44·1	39·3	44·6	47·1
8-10 years	47·6	47·2.	48·7	56·5
10-12 years	51·9	56·4	53·2	68·3

If the corresponding table in last year's Report be consulted, it will be seen that the Indian school girls of Zanzibar can better sustain a comparison than their brothers. Generally, however, the nutrition of Indian children leaves much to be desired and such developmental methods as organised out-door games, physical-drill and breathing exercises should be included in the curriculum.

(c) SCHOOL DISPENSARY.

The subjoined table shows the ailments treated at the Dispensary in the Government School:—

Table M.

Abscess ...	3
Boils ...	18
Bronchial Catarrh ...	142
Burns ...	2
Constipation ...	196
Diarrhœa ...	9
Eczema ...	7
Fever ...	17
Gonorrhœa ...	1
Jiggers ...	55
Orchitis ...	4
Ringworm ...	20
Scabies ...	25
Ulcers ...	176
Whitlow ...	3
Minor Diseases, various ...	29
	807

(*d*) SCHOOL BUILDINGS.

Nothing has occurred to attenuate the criticisms made last year. On the contrary, another school building then uninspected—namely, the Ismailia Khoja Girls' School—has to be condemned in respect of situation, accommodation, ventilation, lighting, furniture, sanitation and, in short, whatsoever physical characters a school should possess.

Two lines of policy suggest themselves to ameliorate gradually the environment in which the plastic minds of the young are moulded, directed and given a permanent impress; one is the generous encouragement by the administration of more hygienic, harmonious, lightsome, airy and cleansable buildings—and this implies assistance in finding suitable sites : the other is a rule that no building may in future be used as a school until the Director of Education and the School Medical Officer have certified that it complies with their requirements and, indeed, the rule could beneficially be made applicable to existing buildings.

TABLE N.

Bacteriological Laboratory Return for the Year 1924.

BLOOD. Total:—1937.	Positive.	Negative.
Spirochæta Obermeyeri ...	0	5
Filaria	...	...
Kala Azar	...	...
Hæmaglobin ...	...	...
Differential Counts ...	12	...
Arneth Counts	...	...
Widal's Test	6	12
Wasserman's	26	29
*Malaria:—	...	969
Undefined	181	...
Sub-Tertian	155	...
Benign Tertian	66	...
Quartan	6	...

SPUTUM. Total:—187.	Positive.	Negative.
Tubercle Bacilli ...	34	11
Pneumococci ...	19	5
Micrococci catarrhalis ...	5	1
Cultural Examination ...	...	...
Spirochæta Bronchialis ...	8	...
Others ...	...	...
Fæces. Total:—1358.	Pos.	Neg.
Amœbæ	21	60
Ankylostoma	159	394
Ascaris	71	18
Tænia	8	2
Other Parasites	10	1
Bilharzia	6	5
Blood	...	...
B. Shiga	1	...
Cultural Examination, for Typhoid	1	1

URINE. Total:—191.	Positive.	Negative.
Sugar	10	...
Albumin	15	...
Casts	59	...
Bilharzia	19	16
Urea	...	...
Catheteral Examination ...	...	...
B. Coli	3	...
Gonococci	20	13
Diazo Reaction	8	1
Other Examinations ...	27	...
Nasal Secretions. Total:—26.	Pos.	Neg.
Leprosy	6	20

REMARKS *This number includes the routine examination of School children, the results of which are as follows:—

	Positive (undefined)	Negative.
Government School ...	24	80
Sir Euan Smith Madressa School ...	8	51
H. H. The Agha Khans Girl School ...	18	289
Total ...	50	420

TABLE N.—(*Continued*).

Bacteriological Laboratory Return for the Year 1924.

RAT EXAMINATION.			VACCINES.			CHEMICAL.	
Total:—2362.	Positive.	Negative.	Total:—5.	Positive.	Negative.	Total:—113.	Number.
B. pestis	...	2362	Staphylococci	...	2	Milk	5
			Streptococci	...	...	Water	14
			Gonococci	...	3	Foodstuffs	...
			B. Coli	...	...	Beverages	8
Miscellaneous. 7.	Pos.	Neg.	B. Shiga	...	...	Tinned Provisions ...	13
			M. Catarrhalis	...	...	Mineral Waters ...	15
			Others	...	...	Legal Cases	28
						Drugs	28
Throat Swabs for B. Diphtheria	...	5	Pathological Examination, Total Sections 2.	Malignant.	Innocent.	Other Examinations ...	2
Smears for spirochæta pallida.	1	...					
Cerebro-Spinal fluid for Pneumococci	1	...		1	1		

Total Examinations 6188.

8. *Control of Opium, 1923.*

The controlled issue of Opium to registered habitues in Zanzibar shows a further decrease in their number from 156 during 1922 to 143, and a decrease in average monthly consumption of Opium from 3 lbs. 9 ozs. to 3 lbs. 40 grs.

The following table shows the races and sexes of those on the register at the close of 1923 as compared to 1922.

TABLE O.

Races or Castes.	Males.	Females.	1923. Total.	1922. Total.
Ismaili Khoja	8	23	31	32
Suni-Mohammedan	23	8	31	34
Ithnasheri Khoja	5	5	10	10
Hindu	5	0	5	6
Baluchi	2	0	2	3
Bohora	0	0	0	1
Swahili	38	3	41	45
Arab	18	0	18	18
Persian	1	0	1	2
Shihiri	1	0	1	2
Gazija	3	0	3	3
Pathan	0	0	0	0
	104	39	143	156

B. MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION.

In all Government Schools lectures and demonstrations on Hygiene, with particular reference to Tropical Diseases, are included as part of the curriculum. Pressure of work unfortunately prevented the lectures to School Teachers being continued throughout the year, but it is hoped shortly to be able to resume these with the previous regularity.

C. RECOMMENDATIONS FOR FUTURE WORK.

These are included under general recommendations (Section VII).

H. C. E. QUIN,
Acting Medical Officer of Health.

SECTION IV.

HOSPITALS AND DISPENSARIES

Reference to the total number of out- and in-patients treated has already been made under Section II.

In-patients.

European Hospital, Zanzibar.—Eighty-three cases were treated in this hospital during the year as compared with 80 cases in 1922 and 62 cases in 1921.

Asiatic and Native Hospitals.—In all hospitals throughout the Protectorate 2,938 cases were treated as compared with 2,812 in 1922 and 1,835 in 1921.

The following table shows by stations the number of cases treated as in-patients during the past three years :—

	1923.		1922.		1921.	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Zanzibar	1,506	57	1,471	68	1,269	64
Mkokotoni	54	2	38	—	50	2
Salem	14	—	—	—	—	—
Weti	516	8	792	4	115	4
Chake Chake	453	17	395	13	320	8
Mkoani	131	1	116	4	81	2
Infectious Disease Hospital	264	60	182	54	163	56
Total	2,938	145	1,994	143	1,998	136

Operations.

During the year 339 operations were performed at the Zanzibar Hospital, 221 at Weti and 41 at Chake Chake. These figures do not include a large number of minor operaions.

Buildings.

Statement of work carried out during 1923.

	Rs.	Cts.
ZANZIBAR		
European Hospital, completion and repairs	75,560	80
Infectious Disease Hospital, extension and repairs	6,879	20
Native Hospital, improvements and repairs	375	78
Police Lines Hospital, improvements	48	92
Nurses' Bungalow, repairs	276	79
SALEM.		
Dispensary, improvements and repairs	1,373	59
WETI.		
Medical Officer's House, completion	3,543	73
Native Hospital, extension and improvements	15,330	84
CHAKE CHAKE.		
Native Hospital, repairs	395	29
Medical Officer's House, repairs	34	63
Nurses' Quarters, repairs	29	19
MKOANI.		
Dispensary, repairs	189	36
Total	104,038	12

The erection of the new European Hospital was completed during December. The old British Consulate, used for many years as a European Hospital, was vacated and the first patient admitted to the new building on the last day of the year.

SECTION V.

PRISON AND POLICE LINES.

Central Prison.

At the end of 1922 there were 122 prisoners remaining at the Central Prison, Zanzibar. During the past year 1,019 were admitted, 915 were discharged, seven died and 219 were remaining at the end of the year.

The seven deaths were due to Pneumonia 3, Strangulated Hernia 1, Ascites 1, Tuberculosis 1, and General Debility 1.

The total number of cases of illness treated during the year was 1,292, of which 384 were admitted to hospital, the average daily number in hospital being 8.3.

The principal causes of illness were :—

Malaria	151	Digestive Disease	261
Ankylostomiasis	211	Tuberculosis	13
Respiratory Diseases	153	Ulcers	57

Throughout the year the prison is infested with mosquitoes, chiefly A. costalis and C. fatigans which, on dissection, show high sporozoite and micro-filarial rates.

The nurseries of the Anophelines are permanent seepage areas on a hill in close proximity to the prison and the elimination of these is of urgent importance.

Ziwani Lines.

The Ziwani Lines were occupied by a detachment of the 2nd K. A. R. until the 28th June and were then handed over to the Zanzibar Police.

The resident strength of the K. A. R. Detachment was about 140 and among these during the seven months 495 cases of illness were treated of which 33 were admitted to hospital, the average time in hospital for each patient being 11.3 days.

The resident strength of the Police was about 160 and during the five months 716 cases were treated and 29 admitted to hospital with an average of 5.8 days for each patient.

The principal causes of illness were Malaria and Respiratory and Digestive Diseases.

No deaths occurred during the year among either the Troops or Police, but one of the former was discharged as medically unfit.

SECTION VI.

EXTRA-DEPARTMENTAL.

(*a*) Registration of Medical Practitioners and Dentists.

A Decree governing the registration of Medical Practitioners and Dentists has been promulgated and will come into force on the 1st February, 1924.

The Board nominated for the purposes of the Decree consists of the Principal Medical Officer (Chairman and Registrar), the Medical Officer of Health and Dr. Andrew Copland (unofficial member).

(*b*) Zanzibar Maternity Association.

This Association has proved itself a great boon to the town. It brings skilled maternity assistance within reach of all classes of the community and is of great educational value.

The Government contributes an annual grant to the Association which is controlled by a committee consisting of Government officials and private persons with the Principal Medical Officer as President.

The Annual Report of the Association is attached (Appendix III).

(*c*) SCIENTIFIC PAPERS PUBLISHED DURING 1923 BY MEMBERS OF THE MEDICAL STAFF.

Dr. W. Mansfield-Aders.—"Trypanosomiasis of Stock in Zanzibar".

Dr. R. Howard.—"A note on the Treatment of Yaws with Sodium Bismuth Tartrate".

Dr. J. A. Taylor.—"Anthrax in Ankole, Uganda".

Dr. H. W. L. Waller.—"The Operation for Elephantiasis Scroti".

SECTION VII.

GENERAL RECOMMENDATIONS.

(*a*) MEDICAL DIVISION.

1. *Increase of Staff.*—An increase of Staff is urgently necessary to enable the ordinary routine work to continue and the Principal Medical Officer to devote himself solely to pressing administrative work. There should, I consider, be not less than seven non-administrative officers in the Protectorate at one and the same time. Four of these are required in Zanzibar Island and three in Pemba with the following duties :—

IN ZANZIBAR ISLAND.

Senior Medical Officer.—To attend medically all European Officials and their wives and families, to undertake charge of all medical cases in the Zanzibar European, Asiatic and Native Hospitals, to examine officials prior to going on leave and candidates for employment, and to perform the routine duties of the Principal Medical Officer while the latter is absent on inspection visits in the two islands.

Surgeon.—To undertake all operative work in the Zanzibar Hospitals and care of all surgical cases. The operations in this Hospital numbered 339 last year, not including a large number of minor operations. The prevalence of Elephantiasis causes many of these operations to be of a prolonged and tedious nature and the establishment of more district dispensaries and the provision of a motor ambulance to bring in cases from the out-districts will, I anticipate, increase the surgical work to any extent with which it is possible to deal.

Two Medical Officers.—To attend non-European officials and their families, to assist in the out-patient department of the Native Hospital, to take charge of the Police, Prison and Mental Hospital, to visit the Ngambo Dispensary daily and the District Dispensaries weekly, to assist the Senior Medical Officer and Surgeon as required and when possible to tour in the out-districts of the Island.

IN PEMBA ISLAND.

Three Medical Officers are required in Pemba Island. The returns for Chake Chake and Weti demonstrate the large amount of important medical work undertaken at these stations and the necessity for the constant supervision of a Medical Officer, who also acts as Medical Officer of Health. It is impossible for the Medical Officer to leave either of these stations without detriment to his routine work, and a third Medical Officer is necessary chiefly to supervise the Funzi Island Leper Settlement and undertake the systematic treatment of the Lepers. At first the whole of his time would be occupied with this work, but later it is hoped that by arrangement with the Medical Officer, Weti, one or other would be able to undertake district touring in parts of the island which are at present outside the reach of medical aid.

2. *Mental Hospital.*—The provision of a Mental Hospital with sufficient area of land to provide suitable exercise grounds and employment for patients is of pressing importance. The present Lunatic Asylum, consisting of a building attached to the Central Gaol under the control of the Prison Officer, is altogether at variance with modern ideas. The accommodation is inadequate for even the chronic and incurable type of case now admitted and there is constant overcrowding. Under these circumstances no attempt can be made to encourage the admission of the early or milder forms of mental disorders which it is so necessary from a eugenic point of view to keep under supervision and which benefit so remarkably under proper care and treatment in suitable surroundings.

3. *District Dispensaries.*—The establishment of numerous dispensaries throughout both islands is necessary to bring medical aid within reach of the natives living in the out-lying districts.

4. *Operation Theatre, Native Hospital.*—The present operation theatre is badly lighted and badly ventilated and requires many structural alterations. During the hot season the surgeon and nurses become exhausted after working in it for a short period. A new up-to-date theatre, with anæsthetic room attached, is urgently required.

5. *Administrative Offices.*—The offices of the Principal Medical Officer are unsatisfactory and inconvenient in many respects. Accommodation for new offices should be provided by an extension of the Public Health Building. All the advantages of a self-contained administrative block would thus be obtained and the present offices could be utilized as much-needed out-patient and special treatment rooms.

(*b*) SANITATION DIVISION.

1. PORT HEALTH AND QUARANTINE SERVICES.

The work associated with these services in a port the size of Zanzibar necessitates additions to the staff of the Sanitation Division. The present European Staff consists of a Medical Officer of Health, an Assistant Medical Officer of Health and a Sanitary Superintendent.

Of these officials rarely more than two (of whom the Medical Officer of Health may at any time be called upon to act for the Principal Medical Officer) can be in the Protectorate at the same time, and upon them devolve the supervision and control of the following activities :—

(1) Port Health and Quarantine Service of Zanzibar, the inspection of dhows and steamers, the granting of pratique, the inspection of foodstuffs in bond or transit and vaccinations.

(2) Sanitation of the town of Zanzibar—the largest, and from a sanitation point of view the most difficult, of all towns in the East African Dependencies.

(3) Sanitation of out-district stations in Zanzibar and Pemba Islands.

(4) The suppression of communicable diseases throughout both islands.

(5) Veterinary Division including Dairies, Cattle Quarantine Station and control of epidemics.

(6) Bacteriological, Pathological and Analytical Laboratory. Reference to Table N. pages 31-32 will indicate the large amount of important work undertaken in this Laboratory.

(7) School Medical Service. Inspection of children, School Clinic and treatment of sick children.

(8) Infectious Diseases Hospital, Leper Settlements and Poor House.

(9) Control of Opium.

(10) Registration of Births and Deaths (Vital Statistics).

It is obvious that the above activities alone more than fully occupy the present Staff, but in addition the fact that the Quarantine Station for Kenya, Uganda and Tanganyika Territory is situated at Zanzibar may at any time necessitate the catering for and medical and general supervision of several hundreds of passengers of various nationalities and castes. This entails additional duties and responsibilities which temporarily disorganize all routine work of the Division.

To prevent this disorganization and to enable progressive measures in other directions to be undertaken, I consider essential the provision of a second Assistant Medical Officer of Health to act as Port Sanitary Medical Officer of Health and take under his control the Zanzibar Port, Health, Sanitary and Quarantine Services and the Inter-Protectorate Quarantine Station. An additional Storekeeper (Asiatic) is also necessary to assist the

Public Health Division Storekeeper who will shortly take charge of the combined store of the Medical and Public Health Divisions and upon whom falls the additional work connected with the provisioning and maintenance of the Quarantine Station.

Quarantine Station Buildings.—Increased accommodation is required for second class and deck passengers.

2. MOSQUITO AND INSECT-BORNE DISEASES.

The prevalence of mosquitoes in the town and consequent heavy infection of the inhabitants with Filaria and Malaria calls for special measures, and it is hoped that the services of the Economic Biologist will be available at an early date to institute a complete mosquito survey of the town and submit recommendations with a view to undertaking an intensive campaign against this serious menace to the health of the community. Much drainage of swamps in and around the town remains to be undertaken. The numerous cess-pits and wells remaining in the town are also a constant source of mosquitoes. Many of the wells are attached to Mosques and the installation of a pipe-water supply and sanitary urinals to the Mosques would be a valuable hygienic measure. A larger staff of mosquito inspectors is required to permit a thorough weekly inspection of all premises. Propaganda work in the shape of popular lectures and cinema exhibits as supplied by the Rockfellow Institute is also desirable to demonstrate the dangers arising from a prevalence of mosquitoes and to teach the inhabitants how they may themselves assist in the work of extermination.

3. INFECTIOUS DISEASES.

Leprosy.—The services of a Medical Officer to reside on Funzi Island to undertake the systematic treatment and to supervise the general welfare of the patients are urgently needed. The native type of dwelling provided for the lepers has proved unsatisfactory and should be replaced as soon as possible by buildings of a more permanent structure.

Tuberculosis.—Tuberculosis, already widespread throughout the town of Zanzibar, is undoubtedly increasing and special hospital accommodation is urgently needed for patients suffering from this disease. Few can be admitted into the Native Hospital with the result that a large number suffering from the later stages of Phthisis remain in the small, airless, overcrowded dwellings of the town until they die, spreading the infection and without any satisfactory care or treatment. Every effort should also be made to reduce the overcrowding in the Bazaars and congested streets and to preserve all open spaces. Additional buildings and structural alterations which tend to interfere with the already insufficient light and ventilation should be strictly prohibited.

4. HELMINTHIC DISEASES.

Ankylostomiasis.—The prevalence of ankylostomiasis throughout the two islands is a matter of serious concern, and it is hoped when the returns of the census to be taken during the coming year are available that it will be possible to devise some preventive and curative measures to reach the mass of the population.

Bilharziasis.—Further investigations are required to determine the endemic centres and the measures necessary to deal with them.

5. INFECTIOUS DISEASES HOSPITAL.

Many of the buildings of the Infectious Diseases Hospital at Gulioni are in a dilapidated condition and the site is being encroached upon to an alarming extent by native dwellings. Recommendations have been submitted with regard to the removal of the hospital to a more isolated site.

6. WATER SUPPLY.

An increase in the number of hydrants is necessary to facilitate the closing of wells in the town. The water of most of the wells is entirely unfit for drinking purposes and all of them serve as ideal mosquito breeding places.

7. MILK SUPPLY.

Advantage should be taken of the exceptional opportunity afforded by the opening of the new Government Dairies to ensure a pure milk supply. This at first will necessarily be possible upon only a small scale but will serve as an introduction to the establishment of a Central Milk Depôt where eventually all milk entering the town can be dealt with.

8. NATIVE DWELLINGS.

More strict supervision is required with regard to the erection of dwellings in the native quarter of the town.

Scattered through the stone-built portion of the town there are also many inflammable thatch-roofed native types of dwellings. These for the most part are ill-ventilated, ill-lighted, dilapidated, infested with rats, foci for tuberculosis and in many cases used as brothels of the lowest type. The acquisition and demolition of these dwellings by the Government would be a valuable hygienic measure and should prove a remunerative investment as the land on which they are built is of considerable value.

9. PUBLIC LATRINES.

Additional Public Latrines are urgently required.

10. GOAT LAIRIES.

The provision of goat lairies for milch and slaughter goats is a sanitary measure of pressing importance (*vide* page 21). A considerable revenue will be obtained from rents charged.

11. TOWNSHIP AUTHORITIES.

The appointment of a Township Authority consisting of the District Officer, Medical Officer and District Engineer for each out-station, to consider improvement proposals from different points of view before submission to Headquarters would be of great value.

12. TRAVELLING FACILITIES TO THE HIGHLANDS OF KENYA AND TANGANYIKA TERRITORY.

This Protectorate is at a disadvantage compared with most if not all other tropical dependencies in that it possesses nothing in the nature of a Hill Station to which Officials can proceed to recuperate after illness, to spend local leave or to which their wives and families can be sent for part of the hot season. This disadvantageous position would be to some extent alleviated if concessions could be obtained on the Kenya and Tanganyika Railways.

13. LECTURES AND DEMONSTRATIONS ON HYGIENE AND SANITATION.

It is hoped to be able to resume the interrupted lectures to School Teachers at an early date and also to institute a course of lectures to members of the Police Force, many of whom are eventually stationed in the out-districts and will be able to carry some elementary knowledge on medical and sanitary matters to parts of the Protectorate at present outside the reach of sanitary supervision and medical aid.

14. GENERAL MEASURES.

Very many nuisances and sanitary abuses still exist and much improvement could be effected by a more vigorous application of the law and stricter supervision and inspection. This would be best effected by the appointment for a limited period of years of one or more European Sanitary Inspectors to assist the Sanitary Superintendent and at the same time train local candidates to replace the present staff as they retire.

PEMBA.

CHAKE CHAKE.

15. The present water supply is liable to contamination and more adequate protection of the gathering ground is necessary.

16. One or, if possible, two public latrines and urinals should be provided.

17. An incinerator is required for the adequate disposal of the town refuse.

18. The water tanks need mosquito proofing.

19. Further swamp drainage should be undertaken from time to time as funds allow.

WETI.

20. Since the establishment of Funzi Island Leper Station all leper rations have to be stored at Weti prior to shipment. Consequently the combined office Store of 10′ by 12′ is now too small. A larger building is required. The present office could be used as a store.

MKOANI.

21. A small building of two rooms of 10′ by 10′ is required for suspected cases of Leprosy or other infectious diseases.

J. A. TAYLOR,
Principal Medical Officer.

TABLE I.

Return showing the European and Principal Members of the Medical Department.

(*a*) European Staff.

Name.	Rank of Appointment.	Were Stationed on 31st Dec., 1923.	Remarks.
J. A. Taylor ...	Principal Medical Officer...	Zanzibar ...	
J. S. de Sousa ...	Senior Medical Officer ...	On leave ...	
H. W. L. Waller ...	Medical Officer ...	Zanzibar ...	Temporary.
R. Howard ...	,, ,, ...	Weti ...	,,
D. S. Scott ...	,, ,, ...	On leave ...	
W. A. Young ...	,, ,, ...	Weti ...	
Miss A. E. Chambers ...	Matron ...	Zanzibar ...	
,, M. Gittins ...	Nursing Sister ...	Chake ...	
Mrs. K. Howard ...	,, ,, ...	Weti ...	
Miss G. M. Rainey ...	,, ,, ...	Zanzibar ...	
B. Spearman ...	Senior Medical Officer of Health.	On leave ...	
H. C. E. Quin ...	Assistant Medical Officer of Health.	Zanzibar ...	Also Acting M. O. H.
P. Cairns ...	Sanitary Superintendent...	Zanzibar ...	
W. M. Aders ...	Economic Biologist ...	On leave ...	

(*b*) Return showing the Principal Members of the Subordinate Staff.

Name.	Rank.	Were Stationed on 31st Dec., 1923.	Remarks.
K. V. Joshi ...	Sub-assistant Surgeon ...	Zanzibar ...	
G. R. Washikar ...	,, ...	Mwera ...	
C. D. Rana ...	,, ...	Mkoani ...	
M. L. Mehta ...	,, ...	Ziwani ...	
S. Livingstone ...	Dispenser ...	Zanzibar ...	
J. F. de Cruz ...	,, ...	,, ...	
C. Almeida ...	,, ...	,, ...	
I. B. Martin ...	Chief Clerk & Storekeeper	,, ...	
S. R. Fernandes ...	Clerk & Storekeeper ...	Chake ...	
F. de Souza ...	Chief Sanitary Inspector...	Zanzibar ...	
F. P. Paul ...	Sub-assistant Surgeon ...	,, ...	
Vrijlal M. Pandit ...	,, ...	,, ...	Infectious Diseases Hospital & Quarantine Station.
Diwan Singh ...	,, ...	,, ...	
A. J. Raval ...	Head Vaccinator ...	,, ...	
R. B. de Souza ...	Inspector ...	,, ...	
Jadowji K. Gohel ...	,, ...	Chake ...	
J. M. Noronha ...	Clerk ...	Zanzibar ...	
Lalchand B. Dedi ...	Store-keeper ...	,, ...	
A. G. Kark ...	Laboratory Assistant ...	,, ...	
Shah Mahomed Khan ...	Veterinary Officer ...	,, ...	
R. Das ...	Asst. Veterinary Officer...		

TABLE II.
FINANCIAL.

	Estimates.			Actual Expenditure or Revenue.		
I. PERSONAL EMOLUMENTS.	£.	s.	d.	£.	s.	d.
1. *Administrative.*						
Principal Medical Officer, Medical Storekeeper, Clerical Staff, Messengers, House and Pemba Allowances. ...	1,746	0	0	1,606	0	0
2. *Medical Division.*						
Senior Medical Officer, Medical Officers, Nurses, Sub-Assistant Surgeons, Dispensers, Native Attendants (Hospitals, Asylums, etc.) Bonus to Medical Officers, Anæsthetic, House and Prison Allowances. ...	10,561	0	0	10,038	6	8
3. *Sanitation, Veterinary, and Biological Divisions.*						
Senior Medical Officer of Health, Assistant Medical Officer of Health, Sanitary Superintendent, Economic Biologist, Veterinary Officers, Laboratory Assistant, Sub-Assistant Surgeons, Sanitary Inspectors, Vaccinators, Mosquito Inspectors, Clerical Staff, Storekeeper, Caretakers, Native Attendants, Scavengers, House and Acting Allowances.	15,908	0	0	14,932	9	5
Total	£28,215	0	0	26,576	16	1
II. OTHER CHARGES.						
Medical Division.						
Medical and Surgical Stores, Incidental and Travelling Expenses, Maintenance of Hospital, and Dispensaries, Electric Lighting, and Passages. ...	4,670	0	0	4,778	13	1
Sanitation, Veterinary, and Biological Divisions.						
Incidental Expenses, General Sanitation, Laboratory, Maintenance of Swamps and Drainage, Passages, Purchase of Opium, Suppression of Infectious Diseases, Travelling Expenses, Maintenance of Veterinary Section, Clothing for Attendants, Maintenance of Biological Section, and Rent of Houses. ...	4,131	0	0	3,217	7	7
Total	£8,801	0	0	7,996	0	8
III. SPECIAL EXPENDITURE.						
Typewriters, Wire Mattresses, Blankets, Dairy Implements, Microscope, Furniture, and Experimental Animals. ...	£467	0	0	271	13	6
IV. REVENUE.						
Hospital and Dispensary Fees. ...	£800	0	0	975	13	0

TABLE III.

(1) POPULATION OF ZANZIBAR AND PEMBA—CENSUS, 1910.

	Males.	Females.	Children.	Total.
ZANZIBAR.				
Zanzibar Town	15,122	14,304	5.396	34,822
Mwera	11,239	13.206	4,656	29,101
Chwaka	5,617	7.458	4,553	17,628
Mkokotoni	11,013	14,242	6,818	32,073
Total	42,991	49,210	21.423	113,624
PEMBA.				
Chake Chake	10,757	13.597	8,958	33,312
Weti	11.416	11.002	8,307	30,725
Mkoani	6.290	7.295	5.487	19,072
Total	28.463	31.894	22.752	83,109
Grand Total	71,454	81.104	44.175	196,733

(2) BIRTHS REGISTERED IN THE ISLAND OF ZANZIBAR, 1914-1923.

	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.
Town Area	401	332	296	305	418	341	473	479	481	413
Mkokotoni District	511	1.023	1.099	1.559	930	720	1.573	986	1.090	785
Mwera	245	426	490	430	479	313	313	513	459	282
Chwaka	190	458	469	392	384	402	600	613	628	555
Total	1.347	2,239	2.354	2.686	2.211	1.776	2.959	2.591	2.658	2.035

(3) DEATHS REGISTERED IN THE ISLAND OF ZANZIBAR DURING THE YEARS 1914-1923.

	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.
Town	1.317	1.008	1.168	1.255	1.359	1.180	1.083	1.076	1.262	1.258
Mkokotoni District	801	1,005	881	947	1.109	859	800	893	888	1,009
Mwera	721	829	814	844	955	718	719	780	803	705
Chwaka	299	378	394	444	451	402	439	512	504	482
Total	3,138	3.220	3,257	3.490	3.874	3.159	3.041	3,261	3.457	3,454

(4) COMPARATIVE STATEMENT OF BIRTHS AND DEATHS IN THE ISLAND OF ZANZIBAR, 1914-1923.

Town Area	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.
Births	401	332	296	305	418	341	473	479	481	413
Deaths	1,317	1,008	1,168	1.255	1,359	1.180	1,083	1,076	1,262	1.258
Districts										
Births	946	1,907	2.058	2,381	1.793	1.435	2.713	2,112	2.177	1.622
Deaths	1,821	2.212	2.089	2.235	2.515	1.983	1.958	2.185	2,195	2.196

(5) BIRTHS AND DEATHS REGISTERED IN THE ISLAND OF PEMBA DURING THE THREE YEARS 1921-1923.

	Births.			Deaths.		
District.	1921.	1922.	1923.	1921.	1922.	1923.
Chake Chake	640	625	485	533	328	366
Weti	689	467	350	554	491	621
Mkoani	342	575	319	271	397	302
Total	1,671	1.667	1.154	1.358	1,216	1,289

(6) BIRTHS—ZANZIBAR TOWNSHIP.

(a. The total number of Births registered in the Town of Zanzibar during the year 1923 was as follows:—

Males	216	
Females	197	
		413
Still-Born		48
		461

(b) Nationalities of Births:—

Ismaili	64	Persian	4
Hindu	62	Mnyamwezi	3
Ithnasheri	60	Baluchi	3
Arab	42	Chinese	2
Bohora	37	Parsee	2
Swahili	30	Seychellian	2
Mohamedan Indians	29	Indian Christian	1
Goan	23	Myao	1
Memon	17	Mnyasa	1
Shihiri	11	Manyama	1
Comorian	10	Soudanese	1
European	7		
		Total	413

(7) DEATHS—ZANZIBAR TOWNSHIP.

(a) The total number of Deaths registered in the Town of Zanzibar during the year 1923 was as follows:—

Males	658
Females	600
Total	1,258

(b) Races of the deceased:—

Swahili	715	European	7
Gazija (Comorian)	77	Manyema	6
Arab	68	Baluchi	6
Shihiri	59	Kikuyu	6
Ismaili (Khoja)	56	Goan	5
Other Mohamedan Indian	51	Mzigua	3
Hindu	39	Barawa	3
Ithnasheri (Khoja)	25	Mzaramoo	3
Bohora	24	Mgindo	2
Memon	21	Mdengereko	2
Mnyamwezi	20	Mbissa	2
Somali	17	Persian	1
Unknown	15	Ndigo	1
Mnyassa	14	Masai	1
Myao	8		
		Total	1,258

(*c*). Return of General causes of Deaths in Zanzibar Town during 1923.

Diseases	Reported by		Total.
	Qualified Practitioners.	Unqualified Persons.	
INFECTIVE DISEASES.			
Dysentery	4	9	13
Enteric	1	...	1
Gonorrhœa	...	1	1
Influenza	2	...	2
Leprosy	...	...	...
Malaria	29	102	131
Black-water	2	...	2
Measles	1	...	1
Pneumonia	20	13	33
Septicæmia	4	3	7
Small-pox	36	...	36
Syphilis	1	10	11
Tetanus	2	...	2
Tuberculosis	30	155	185
Undefined Fever	3	29	32
Other Diseases	2	1	3
INTOXICATIONS.			
Alcoholism	1	...	1
GENERAL DISEASES.			
Anæmia	5	51	56
Anæmia-Pernicious	1	...	1
Diabetes	2	1	3
Rickets	2	1	3
Debility	21	229	250
Debility-Infantile	1	11	12
Rheumatism	4	10	14
Other Diseases	2	1	3
LOCAL DISEASES.			
Diseases of the Nervous System.			
Sub-Section 1.			
Hydrocephalus	1	...	1
Encephalitis	1	1	2
Other Diseases	8	...	8
Carried forward	186	628	814

(*c*) Return of General causes of Deaths in Zanzibar Town during 1923.—(*Continued*).

Diseases.	Reported by		Total.
	Qualified Practitioners.	Unqualified Persons.	
Brought forward ...	186	628	814
LOCAL DISEASES—(*continued*).			
Diseases of the Nervous System.			
Sub-Section 2.			
Apoplexy	1	...	1
Paralysis	3	32	35
Epilepsy	1	1	2
Other Diseases	13	31	44
Sub-Section 3.			
Dementia	2	1	3
Diseases of the Circulatory System.			
Valvular, Mitral	19	3	22
Diseases of the Respiratory System.			
Laryngitis	1	...	1
Bronchitis	14	98	112
Broncho-Pneumonia ...	16	43	59
Abscess of Lung	1	...	1
Pleurisy	...	1	1
Asthma	1	10	11
Other Diseases	1	...	1
Diseases of the Digestive System.			
Tonsilitis	1	...	1
Ulceration of Stomach ...	1	...	1
Enteritis	1	1	2
Appendicitis	1	...	1
Ulcer of Intestines ...	1	1	2
Colitis	1	...	1
Hernia	2	...	2
Diarrhœa	9	44	53
Hepatitis	...	1	1
Hepatic Congestion ...	...	1	1
Cirrhosis Liver	3	...	3
Jaundice	3	...	3
Peritonitis	2	...	2
Other Diseases	...	2	2
Carried forward ...	284	898	1182

(*c*) Return of General causes of Deaths in Zanzibar Town during 1923.—(*Continued*).

Diseases.	Reported by		Total.
	Qualified Practitioners.	Unqualified Persons.	
Brought forward ...	284	898	1182
LOCAL DISEASES—(*continued*).			
Diseases of the Urinary System.			
Nephritis	3	10	13
Hæmaturia	1	...	1
Other Diseases	6	5	11
Female Organs.			
Puerperal Septicæmia ...	3	2	5
Other Diseases	1	...	1
Diseases of Connective Tissues.			
Abscess	1	3	4
Elephantiasis	...	5	5
Disease of the Skin.			
Ulcers	...	1	1
Injuries	10	...	10
Tumours-Malignant ...	...	2	2
Filariasis	1	...	1
Ankylostomiasis	10	12	22
Total ...	320	938	1258

TABLE IV.

Summary of Routine Sanitary Work done during the year in the town of Zanzibar, for the year ending 31st December, 1923.

Approximate Area.	Number of proclaimed open spaces.
1,400 Acres	One

2.—POPULATION.

No. of Natives Approximately.	No. of Asiatics Approximately.	No. of Europeans Approximately.	Total Approximately.
26,000	12,000	250	38,250

3.—HOUSING.

Total No of Houses.	No. occupied by Europeans.	No. occupied by Natives and Asiatics.	No. of Huts.
3,280	77	3,203	7,196

4.—MOSQUITO PROTECTION OF HOUSES.

No. of European houses wholly mosquito-protected ..	2
No. of European houses with mosquito room ..	Nil
No. rendered during the year wholly mosquito-protected ...	Nil
No. rendered during the year partially mosquito-protected ...	Nil

5.—ERECTION OF NEW BUILDINGS DURING THE YEAR.

No. of public buildings erected with sanction as to site, construction and relation to other buildings ...	11
No. of houses erected with sanction as to site, construction, and relation to other buildings ...	41
No. of huts erected with sanction as to site, construction, and relation to other buildings ...	Nil
No. of houses built without sanction ...	29
No. of huts built without sanction ...	390

ACTION TAKEN.

Number of Prosecutions.		Number Demolished.	
Huts.	Houses.	Huts.	Houses.
...	2	Nil	Nil

6.— MARKETS.

Total Number.	Number paved and drained.	Number unpaved.
4	4	...

7.—SLAUGHTER-HOUSES.

Total Number.	Number paved and drained.	Number unpaved.
1	1	Nil

8.—LATRINES.

	For Males.		For Females.	
	No.	No. of Seats.	No.	No. of Seats.
No. of public latrines:—	2	10	2	6
No. of new public latrines erected during the year	...	...	...	...
No. of public latrines repaired during the year	...	...	...	...
No. of public latrines demolished during the year	...	...	...	...

No. of private latrines	30
Average number of pails of night-soil daily removed	30
Average number of soiled pails removed and clean pails substituted ...	30
No. of night-soil men employed to clean latrines and to remove excreta ...	Nil.
No. of cesspools	5000
No. of cesspools cleaned	211
No. of new cesspools constructed during the year	Nil.
No. of old cesspools abolished	Nil.
No. of cesspools oiled regularly by Department	530

9.—REMOVAL OF REFUSE.

No. of dustbins	116
No. of carts at work daily to remove refuse from the streets, yards and premises	46
Amount of refuse removed daily	138 cart loads.
No of men employed for removing refuse	191

10.—MODE OF DISPOSAL OF EXCRETA, REFUSE AND OFFAL.

	Daily average No. of pails of excreta.	Daily average No. of cartloads of refuse.	Daily average No. of cart-loads of slaughter house and market offal.
Buried or trenched ...	Nil	...	...
Burnt	Nil	138	2
Thrown into sea ...	30	...	...
Otherwise dealt with..	...	...	...

11.—AVERAGE DAILY NUMBER OF CARTLOADS OF CANS, BOTTLES, BROKEN CROCKERY AND OTHER INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES, HUTS AND COMPOUNDS.

Cartloads.	Included in previous Table.

12.—WATER SUPPLY.

PIPE-BORNE WATER:—	
Source (river, lake or spring)	Spring.
No. of linear yards	No record.
No. of standpipes along roads	34
No of standpipes in compounds and houses	182
WELLS:—	
Public—	
Number	6
No. with pumps protected against surface water and mosquito-protected	Nil.
Private—	
Number	91
No. with pumps protected against surface water and mosquito-protected	8
TANKS:—	
Public—	
No underground	Nil.
No. mosquito-protected and served by pumps	,,
No. above ground	,,
No. mosquito-protected	,,
No. of 400 gallons capacity or less	,,
No. above 400 gallons	,,
Private—	
No. underground	5
No. mosquito-protected	5
No. above ground	390
No. mosquito-protected	140
No. of 400 gallons capacity of less	No. record.
No. above 400 gallons	,,
NATURE OF TANKS:—	
Wood	Nil.
Iron	140
Concrete	250
BARRELS:—	
Number	2860
No. mosquito-protected	1139
No. unprotected	1721

13.—DRAINAGE.

	Public.	Private.
MASONRY DRAINS:—		
Linear yards of masonry drains ...	No record	No record
Linear yards constructed during the year ...	do.	do.
Linear yards repaired during the year ...	do.	do.
Linear yards of new drains constructed during the year ...	1,040	do.
EARTH DRAINS OR DITCHES:—		
Linear yards of earth drains or ditches ...	5,280	do.
No. of linear yards of ditches dug and cleansed ...	10,560	do.
No. of linear yards of ditches dug and graded ...	No record	do.
Average frequency of clearing ditches of grass ...	4 times per year	do.

14.—CLEARANCE OF UNDERGROWTH, LONG GRASS AND JUNGLE.

No. of square yards of weeds, grass and vegetation cut and removed ...	39,061
Average frequency of clearance of rank vegetation on same area ...	4 times per year

15.—EXCAVATIONS AND LOW-LYING LAND.

No. of pools and excavations ...	Numerous
No. of excavations filled up ...	1
Amount of low-lying and marsh land raised and drained ...	7 acres
No. of pools, marshes, etc., fish stocked ...	...
No. of cubic yards of material used for filling up pools and excavations	2,400
No. of persons fined for making new excavations ...	...
Average number of men daily employed in filling up pools, etc. ...	3

16.—OILING.

No. of drains oiled ...	6
No. of pools and excavations oiled ...	Numerous
No. of tanks and barrels oiled ...	do.
No. of cesspools oiled weekly ...	533
Average number of men daily employed for oiling drains, pools and water-tanks or barrels ...	2

17.—INSPECTIONS AND PROSECUTIONS.

Number of Sanitary Inspectors employed ...	7
Visits to private houses ...	4,315
Visits to eating-houses ...	110
Visits to lodging and boarding-houses ...	2,483
Visits to ærated water factories ...	30
Visits to bakehouses ...	239
Visits to cowsheds ...	2,274
Visits to warehouses ...	1,822
Visits to markets ...	2,912
Number of notices served to remove insanitary conditions ...	1,060
Number of notices outstanding ...	20
Number of nuisances abated ...	620
Number of prosecutions instituted for not removing insanitary conditions	5
Number of convictions obtained for not removing insanitary conditions ...	5
Number of Mosquito Inspectors employed ...	7
Number of premises where mosquito larvæ found ...	257
Number of mosquito notices served ...	209
Number of mosquito notices outstanding ...	14
Number of mosquito nuisances abated ...	160
Number of prosecutions instituted for having mosquito larvæ on premises	Nil
Number of convictions obtained for not removing facilities for the breeding of mosquitoes ...	Nil
Number of houses cleaned out and disinfected ...	24
Number of times public latrines cleaned out and disinfected ...	Daily
Number of times public urinals cleaned out ...	Daily

18.—RAT DESTRUCTION.

Rats trapped ...	6,265
Rats purchased ...	3,210
Number of Trappers employed ...	9

TABLE XXI.

Meteorological Observations, Zanzibar Town and Banani, Pemba, 1923.

	ZANZIBAR TOWN.						BANANI, PEMBA.				
			TEMPERATURE					TEMPERATURE			
	Rainfall	Relative Humidity	Mean Maximum	Mean Minimum	Absolute Maximum	Absolute Minimum	Rainfall	Mean Maximum	Mean Minimum	Absolute Maximum	Absolute Minimum
January ..	3·99	74	86·5	79·2	88·9	76·1	22·11	86·6	78·4	89·5	75·0
February ..	0·98	72	87·7	80·9	90·1	77·7	0·44	89·2	80·2	92·0	79·0
March ..	3·51	69	88·3	80·5	91·3	74·1	1·09	81·4	72·7	91·0	79·0
April ..	22·06	51	84·6	77·4	89·0	73·9	14·94	86·8	77·9	90·0	75·0
May ..	1·68	76	84·8	77·4	88·0	74·1	11·19	84·6	77·0	88·0	73·0
June ..	1·32	77	83·3	74·8	84·9	73·3	4·05	84·1	75·3	86·0	73·0
July ..	2·39	78	82·4	74·1	83·9	71·0	3·06	84·6	76·7	85·0	70·0
August ..	3·93	77	81·3	72·6	83·3	69·7	2·56	82·6	72·9	85·0	71·0
September ..	0·64	73	83·4	73·6	86·1	72·0	0·30	84·7	73·9	87·5	70·0
October ..	1·30	74	85·0	75·7	87·2	71·8	0·95	86·5	75·9	89·0	74·0
November ..	8·43	74	85·5	77·5	88·2	75·6	10·99	86·6	77·4	89·0	74·0
December ..	7·12	74	87·3	79·9	90·1	77·1	4·64	88·3	79·0	91·5	74·0

TABLE V.

Monthly Rainfall—Zanzibar Town, 1914 to 1923.

	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Average for 10 years
January ...	2·84	1·74	1·63	2·20	2·33	2·02	0·00	1·39	0·00	3·99	1·81
February ...	0·05	0·76	3·50	4·29	1·36	1·07	0·08	2·48	0·00	0·98	1·45
March ...	8·56	6·03	2·29	4·46	4·37	7·27	1·19	4·77	3·84	3·51	4·62
April ...	12·69	9·62	33·35	16·63	11·55	8·85	8·47	17·00	2·10	22·06	14·23
May ...	3·84	10·30	4·35	10·63	9·66	2·81	15·09	4·58	13·00	1·68	7·59
June ...	0·88	5·00	1·38	4·20	6·27	0·20	0·77	0·37	3·99	1·32	2·43
July ...	0·22	3·94	0·38	1·23	4·86	3·00	0·13	1·62	1·68	2·39	1·94
August ...	3·65	0·45	2·11	2·05	0·60	1·63	1·41	0·59	1·33	3·93	1·77
September ...	1·04	1·17	2·81	2·01	0·76	1·46	1·63	0·32	1·37	0·64	1·32
October ...	0·89	2·63	5·83	2·27	5·77	3·21	5·88	5·39	4·97	1·30	3·81
November ...	4·32	9·38	2·94	6·79	2·18	11·81	1·76	9·41	14·36	8·43	7·13
December ...	4·37	0·61	2·92	0·44	6·79	4·65	7·62	1·79	7·41	7·12	4·37
Total ...	43·35	51·63	63·49	57·06	56·50	47·98	44·03	49·71	54·05	57·35	52·47

TABLE VI. (*a*).

(1). Return of Diseases and Deaths (In and Out-patients) for the year 1923.

(*Non-Europeans only*).

Diseases.	Out-patients.	In-patients.	
	Total Cases Treated.	Admissions.	Deaths.
INFECTIVE DISEASES.			
Beri-Beri	1	2	1
Cerebro-Spinal Fever	1	1	1
Chicken-Pox	6	18	..
Dengue	1	..	..
Dysentery	14	9	..
Enteric	2	4	..
Gonorrhœa	778	17	1
Influenza	221	39	..
Leprosy	9	9	..
Malaria (*a*) Benign Tertian ..	1682	260	..
(*b*) Quartan	9	..	..
(*c*) Sub-Tertian ..	708	92	..
(*d*) Chronic Malaria ..	234	14	1
(*e*) Black-water-Fever ..	..	4	..
Measles	7	11	..
Pneumonia	33	68	11
Rheumatism, Acute	275	12	..
Septicæmia	1	1	1
Smail-Pox ..	..	236	60
Syphilis —(*a*) Primary	150	24	1
(*b*) Seondary	24	3	..
(*c*) Tertiary	52	5	..
(*d*) Inherited	3	..	..
(*e*) Cerebral	..	1	..
Tetanus	..	1	1
Tuberculosis	54	34	10
Whooping Cough	13	..	..
Yaws	195	14	..
Mumps	3	..	..
Undefined Fever	518	14	..
Other Deseases	6	..	..
INTOXICATIONS.			
Alcoholism	3	2	..
Morphinism	..	1	..
Others	23	..	..
GENERAL DISEASES.			
Anæmia	727	6	..
Diabetes	7	5	1
Exophthalmic Goitre	7	..	..
Hodkin's Diseases	..	1	..
Debility	571	37	5
Other Diseases	1	..	..
LOCAL DISEASES.			
Diseases of the Nervous System.			
Sub-Section 1.			
Neuritis	12	2	..
Other Diseases	4	3	1
Sub-Section 2.			
Apoplexy	..	1	..
Paralysis	17	9	..
Chorea	1	1	..
Carried forward ..	6373	961	95

TABLE VI. (*a*).

(1) Return of Diseases and Deaths (In and Out-patients) for the year 1923.—(*Continued*).

(*Non-Europeans only*).

Diseases.	Out-patients.	In-patients.	
	Total Cases Treated.	Admissions.	Deaths.
Brought forward ..	6373	961	95
LOCAL DISEASES—(*Continued*)			
Sub-Section 2.			
Epilepsy	2	13	..
Neuralgia	385	..	..
Hysteria	3	1	..
Neurasthenia	..	1	..
Other Diseases	10	1	..
Sub-Section 3.			
Mental Diseases.			
Idiocy	..	1	..
Mania	..	1	..
Melancholia	..	1	..
Dementia	1	..	..
Delusional Insanity	..	2	..
Diseases of the Eye.			
Blepharitis	4	..	..
Conjunctivitis	575	13	..
Entropion and Trichiasis ..	..	3	..
Keratitis	26	5	..
Ulceration of Cornea	13	3	..
Iritis	13	3	..
Trachoma	8	1	..
Optic Neuritis	1	..	..
Leucoma	4	..	..
Cataract	16	22	..
Other Diseases	64	10	..
Diseases of the Ear.			
Inflammation	121	..	..
Other Diseases	228	3	..
Diseases of the Nose.			
Coryza	206	3	..
Other Diseases	1	3	..
Diseases of the Circulatory System.			
Pericarditis	..	1	..
Endocarditis	12	9	2
Valvular Mitral	35	15	5
,, Aortic	..	3	..
Other Diseases	8	6	1
Diseases of the Repiratory System.			
Laryngitis	2	1	..
Bronchitis	3249	56	1
Broncho-Pnemonia	13	3	..
Emphysema	3	..	..
Pleurisy	96	3	..
Asthma	54	5	..
Other Diseases	275	1	1
Diseases of the Digestive System.			
Stomatitis	46	3	..
Caries of Teeth	1364	2	..
Glossitis	25	..	..
Pharyngitis	168	2	..
Tonsilitis	227	..	..
Gastritis	112	2	..
Ulceration of Stomach	5	1	..
Carried forward ..	13748	1164	105

TABLE VI. (*a*).

(1). Return of Diseases and Deaths (In and Out-patients) for the year 1923.—(*Continued*).

(*Non-Europeans only*).

Diseases.	Out-patients.	In-patients.	
	Total Cases Treated.	Admissions.	Deaths.
Brought forward ..	13748	1164	105
LOCAL DISEASES—(*Continued*).			
Diseases of the Digestive System.			
Dyspepsia	237	1	..
Enteritis	8	..	..
Appendicitis	1	1	..
Colitis	8	22	1
Hernia	198	98	3
Diarrhœa	279	39	..
Constipation	3358	13	..
Colic	518	13	..
Hæmorrhoids	22	12	..
Hepatitis (Acute)	26	7	..
Hepatic Congestion	351	6	..
Abscess (Hepatic)	5	..	..
Cirrhosis (Hepatic)	12	..	..
Jaundice	16	2	..
Peritonitis	..	1	1
Ascites	4	5	2
Fistula in Ano ..	2	1	..
Other Diseases	107	7	..
Diseases of the Lymphatic System.			
Splenitis	197	4	..
Lymphangitis	68	19	..
Other Diseases	13	1	..
Diseases of the Urinary System.			
Nephritis (Acute)	4	6	2
,, (Chronic)	13	4	2
Pyelitis : ..	2	4	..
Calculus	1	..	..
Cystitis	41	8	..
Hæmaturia	11	..	..
Retention of Urine	..	7	..
Other Diseases	16	4	1
Diseases of the Generative System.			
Male Organs—			
Urethritis	80	3	..
Stricture	47	15	2
Soft Chancre	52	7	..
Hydrocele	287	129	2
Varicocele	66	1	..
Orchitis	190	15	..
Haematocele	..	10	..
Epididymitis	14	1	..
Phimosis	80	..	..
Other Diseases	39	25	..
Female Organs—			
Amenorrhœa	14	1	..
Dysmenorrhœa	10	..	..
Menorrhagia	13	11	..
Parturition	..	1	..
Abortion	2	..	..
Puerperal Septicæmia	..	2	..
Mastitis	3	..	1
Other Diseases	21	4	1
Carried forward ..	20184	1674	123

Table VI. (*a*).

(1). Return of Diseases and Deaths (In and Out-patients) for the year 1923.—(*Continued*).

(*Non-Europeans only*).

Diseases.	Out-patients.	In-patients.	
	Total Cases Treated.	Admissions.	Deaths.
Brought forward ..	20184	1674	423
LOCAL DISEASES—(*Continued*).			
Diseases of the Organs of Locomotion.			
Arthritis	57	12	..
Synovitis	52	9	..
Compound Ganglion	..	4	..
Bursitis	..	1	..
Myalgia	1299	11	..
Goundou	..	1	..
Other Diseases	34	4	..
Diseases of Connective Tissue.			
Cellulitis	164	20	..
Abscess	306	71	..
Elephantiasis	104	49	4
Other Diseases	39	7	..
Diseases of the Skin.			
Urticaria	19	..	..
Eczema	144	9	..
Boil	238	1	..
Carbuncle	2	1	..
Herpes	15	4	..
Psoriasis	3	..	..
Tinea	133	3	..
Tinea Cruris	35	..	..
Scabies	540	9	..
Impetigo	16	..	..
Prickly Heat	21	..	..
Ulcers	3796	201	..
Warts	1	1	..
Other Diseases	89	4	..
Injuries-General	1630	21	4
do. Local	2626	221	5
Tumours Simple	54	23	2
do Malignant	1	6	1
Parasites—Animal			
Trematoda	2	..	..
Bilharzia	121	9	..
Cestoda—			
Tænia Saginata	..	1	..
Nematoda—			
Ascaris	26	24	..
Dracunculus	..	2	..
Filariasis	239	34	..
Strongylus Intestinalis ..	..	12	..
Ankylostomiasis	2029	482	6
Other Diseases	27	1	..
Insecta—			
Myiasis	19	..	..
Jiggers	52	6	..
Total ..	34123	2938	145

TABLE VI. (*a*).

(2). Return of Diseases and Deaths (In and Out-patients) for the year 1923.

(Europeans only).

Diseases.	Out-patients.	In-patients.				
	Total Cases Treated.	Remaining in Hospital at end of 1922	Year 1923. Admissions.	Year 1923. Deaths.	Total.	Remaining in Hospital at end of 1923
INFECTIVE DISEASES.						
Dengue	1	..	..	..	..	..
Dysentery	..	..	1	..	1	..
Enteric	2	..	2	..	2	..
Gonorrhœa	1	..	..	..	..	..
Influenza	5	1	15	..	16	..
Malaria—(*a*) Benign Tertian	12	4	10	..	14	..
(*c*) Sub-Tertian	6	..	9	..	9	..
(*d*) Chronic Malaria	4	..	..	..	..	..
(*e*) Blackwater Fever	..	..	2	2	2	..
Relapsing Fever	..	..	1	..	1	..
Rheumatism Acute	1	1	..	..	1	..
Septicæmia	..	..	1	..	1	..
Syphilis—(*a*) Primary	1	..	..	..	..	..
Tuberculosis	..	..	2	..	2	1
Undefined Fever	10	..	5	..	5	..
Other Diseases	5	..	..	..	..	..
GENERAL DISEASES.						
Anæmia	4	..	..	..	..	..
Scurvy	1	..	..	..	..	..
Debility	31	..	1	..	1	..
LOCAL DISEASES.						
Sub-Section 1.						
Other Diseases	2	..	..	..	..	..
Sub-Section 2.						
Neuralgia	14	..	..	..	..	..
Hysteria	2	..	..	..	..	..
Other Diseases	3	..	1	..	1	..
Diseases of the Eye						
Blepharitis	1	..	..	..	..	..
Conjunctivitis	6	..	..	..	..	..
Ulceration of Cornea	1	..	..	..	..	..
Iritis	1	..	..	..	..	..
Cataract	1	..	..	..	..	..
Other Diseases	4	..	2	..	2	..
Diseases of the Ear						
Inflammation	1	..	..	..	..	..
Other Diseases	5	..	..	..	..	..
Diseases of the Nose						
Coryza	29	..	..	..	..	..
Other Diseases	6	..	..	..	..	..
Diseases of the Circulatory System.						
Valvular, Mitral	1	..	..	..	..	..
Diseases of the Respiratory System.						
Laryngitis	4	..	..	..	..	..
Bronchitis	28	..	1	..	1	..
Other Diseases	7	..	..	..	..	..
Carried forward	200	6	53	2	59	1

TABLE VI. (*a*).

(2). Return of Diseases and Deaths (In and Out-patients) for the year 1923.—(*Continued*).

(*Europeans only*).

Diseases.	Out-patients.	In-patients				
	Total Cases Treated.	Remaining in Hospital at end of 1922	Yeae 1923.		Total.	Remaining in Hospital at end of 1923
			Admissions.	Deaths.		
Brought forward ..	200	6	53	2	59	1
LOCAL DISEASES—(*Continued*).						
Diseases of the Digestive System.						
Diarrhoea	6	..	..	..	..	..
Constipation	47	..	..	..	..	..
Colic	10	..	..	..	..	..
Stomatitis	7	..	..	..	..	..
Caries of Teeth	4	..	..	..	..	..
Pharyngitis	11	..	..	..	..	..
Tonsilitis	15	..	1	..	1	1
Gastritis	11	..	1	..	1	..
Dyspepsia	16	..	..	..	..	..
Enteritis	16	..	..	..	..	..
Hæmorrhoids	1	..	1	..	1	..
Hepatic Congestion	15	..	..	..	..	..
Fistula in Ano	..	1	1	..	2	..
Other Diseases	5	..	..	..	..	..
Diseases of the Lymphatic System.						
Splenitis	..	..	1	..	1	..
Diseases of the Urinary System.						
Pyelitis	1	..	..	..	..	..
Cystitis	2	..	1	..	1	1
Other Diseases	6	..	..	..	..	..
Diseases of the Generative System.						
Male Organs—						
Urethritis	5	..	..	..	..	..
Orchitis	1	..	..	..	..	..
Other Diseases	1	..	..	..	..	..
Female Organs—						
Amenorrhoea	1	..	..	..	..	..
Endometritis	..	..	1	..	1	..
Menorrhagia	5	..	..	..	..	..
Other Diseases	..	..	2	..	2	..
Diseases of the Organs of Locomotion.						
Myalgia	13	..	1	..	1	..
Other Diseases	..	..	1	..	1	..
Diseases of the Connective Tissue.						
Cellulitis	1	..	..	..	..	..
Abscess	3	..	2	1	2	..
Other Diseases	1	..	..	..	..	..
Diseases af the Skin						
Urticaria	1	..	..	..	..	..
Eczema	6	..	..	..	..	..
Boil	6	..	..	..	..	..
Carbuncle	2	..	..	..	..	..
Tinea	5	..	..	..	..	..
Scabies	2	..	..	..	..	..
Impetigo	1	..	..	..	..	..
Prickly Heat	15	..	..	..	..	..
Ulcers	6	..	..	..	..	..
Other Diseases	10	..	..	..	..	..
Injuries—Local	19	..	2	..	2	..
,, —General	4	..	..	..	..	..
Carried forward ..	481	7	68	3	75	3

TABLE VI. (*a*).

(2). Return of Diseases and Deaths (In and Out-patients) for the year 1923.—(*Continued*).

(*Europeans only*).

Diseases.	Out-patients.	In-patients.				
	Total Cases Treated.	Remaining in Hospital at end of 1922	Year 1923		Total.	Remaining in Hospital at end of 1923
			Admissions.	Deaths.		
Brought forward ..	481	7	68	3	75	3
LOCAL DISEASES—(*Continued*).						
Diseases of the Skin.						
Nematoda—						
Ascaris	1	..	..	..	..	..
Filariasis	..	..	1	..	1	..
Insecta—						
Myiasis	1	..	..	..	..	..
	483	7	69	3	76	3
Parturition	..	..	7	..	7	1
Total ..	483	7	76	3	83	4

TABLE VI.

GULIONI INFECTIOUS DISEASES HOSPITAL.

The following table shows the admissions to the Hospital during the year 1923 :—

	Remaining from 1922.	Admitted during 1923.	Total.	Died.	Discharged.	Remaining for 1924.	
Small-Pox ...	...	70	70	35	32	3	
Chicken-Pox ...	...	17	17	...	16	1	
Measles ...	...	11	11	...	11	...	
Leprosy ...	...	5	5	...	5	...	4 sent to Funzi Asylum, 1 escaped.
Total ...	...	103	103	35	64	4	
Contacts :—							
Small-Pox ...	...	36	36	...	32	4	
Chicken-Pox ...	...	14	14	...	14	...	
Measles ...	...	3	3	...	3	...	
Total ...	...	53	53	...	49	4	
Grand Total ...	...	156	156	35	113	8	

The following are the particulars of Small-Pox cases treated at Infectious Diseases Hospital at Gulioni :—

(*a*) Total number of cases		70
Died	35	
Discharged	32	
Remaining	3	
	——	70
(*b*) The Sexes of the cases :—		
Males	58	
Females	12	
	——	70
(*c*) Distribution of cases :—		
Town proper	1	
Native quarters of the town	29	
Government Hospital	2	
Lunatic Asylum	1	
U.M.C.A. Hospital	1	
Steamers and Dhows	6	
Mwera District	19	
Mkokotoni District	11	
	——	70

(*d*) Nationalities :—

Swahili	56	
Somali	3	
Arab	1	
Comorian	2	
Ndengereko	1	
Ismaili Khoja	2	
Hindu	3	
Mohammedan Indian	2	
	——	70

(*e*) Ages :—

Under 1 year	—	
1 to 5	4	
6 to 10	—	
11 to 20	14	
21 to 30	38	
31 to 40	11	
41 to 50	3	
	——	70

GULIONI INFECTIOUS DISEASES HOSPITAL.

Comparative Table showing cases during the past three years :—

Diseases.	1921.				1922.				1923.				
	Admitted.	Discharged.	Died.	Remaining.	Admitted.	Discharged.	Died	Remaining.	Admitted.	Discharged.	Died.	Remaining.	
Chicken-Pox ..	1	1	..	..	5	5	..	..	17	16	..	1	
Debility	1	1	..	..	..	..	..	..	..	..	..	..	
Leprosy	..	..	..	..	..	..	..	..	5	5	..	.	4 sent to Asylum. 1 escaped.
Measles	1	1	..	..	..	..	..	..	11	11	..	..	
Small-Pox	122	81	40	1	124	78	43	3	70	32	35	3	
Contacts	243	243	..	..	241	240	..	1	53	49	..	4	

APPENDICES.

1. Annual Medical and Sanitary Report for Pemba, 1923.
2. The Report of the Economic Biologist for 1923.
3. The Annual Report of the Zanzibar Maternity Association for 1923.

APPENDIX I.

ANNUAL MEDICAL AND SANITARY REPORT FOR PEMBA, 1923.

1. PUBLIC HEALTH.

Last year's Report showed something of the development of the Medical work in Pemba that might be expected if an adequate medical staff were provided. There were two Medical Officers, stationed at Chake Chake and Weti respectively, with regular organised hospitals, and there was a Sub-Assistant Surgeon in charge of the Dispensary at Mkoani, and patients were treated from practically every village in the island.

Unfortunately in 1923, largely owing to unexpected sickness and invaliding among the Medical Staff, it was found necessary to withdraw the Medical Officer from Chake Chake, and the work was carried on in charge of the Sister and the Dispenser, while the Medical Officer at Weti undertook the general supervision of the Medical and Public Health work of the whole island.

Naturally, no further progress or development could be expected under these circumstances and in some directions, particularly as regards operative and microscopical work, there was a considerable setback. It speaks well for the general organization of the hospitals and for the confidence in European medical treatment which has been attained by the natives that more ground has not been lost.

The statistics show that the numbers of patients, both at Chake Chake and Weti, have been nearly the same as last year, while at Mkoani there has been an increase of over 1,000 in the out-patients, and of 21 in the in-patients. If the full Medical Staff can be restored in 1924 there is no reason why the promise of 1922 should not be realized and far exceeded, but the development of the work during the last five years has been so great that it cannot possibly be adequately carried on by a single Medical Officer, particularly as there is no trained subordinate staff to whom he can depute any of his routine duties.

Structural Alterations.—The new out-patient block at Weti was under construction during the year, but unfortunately it was not completed, so that nothing could be done to relieve the overcrowding of the temporary hospital or to improve the condition of the theatre. Next year, when the building is in use, the hospital accommodation should be adequate and the out-patient department should prove convenient and satisfactory in operation.

The house for the Medical Officer, Weti, was finished in April and proved to be very well situated and conveniently near the hospital.

Officials.—The health of the European Officers has been good. Regular prophylactic Quinine has been in general use. One officer at Chake Chake had what was probably a mild attack of Paratyphoid Fever. One European child at Chake Chake had a severe attack of Pneumonia. One baby died at seven weeks old.

The non-European Officials also show a good record, though some of the wireless operators and some of the Agricultural Staff suffered from an undue amount of Malaria. There has been no case of Blackwater Fever among the staff.

Prisoners.—The health of the prisoners has been good at all the stations. At Weti only three required admission to hospital during the year. Those found to be suffering from Ankylostomiasis on admission to Gaol were treated as out-patients.

Clinical Observations—Prevalent Diseases.—Malaria was somewhat less prevalent than usual owing to the low annual rainfall. Prophylactic Quinine has been administered regularly to non-European Officials, Police, school children and prisoners.

The following number of doses were given :—

Weti ...	3,806
Chake Chake ...	2,920
Mkoani ...	1,110
Total ...	7,836

Some of the road labourers, especially some Somalis, who had little or no acquired immunity, suffered severely and there were several cases of Cerebral Malaria among them.

Ankylostomiasis.—It might be well to take stock of the work that has been done on this disease in Pemba during the last five years. For this period all cases presenting themselves as out-patients have received treatment, and most of the cases admitted to hospital for other diseases or for operation have been examined.

This enables a definite opinion to be formed of the extent of the disease in the general community. The treatment used has been almost entirely Ol. Chenapodii, and the results have been very satisfactory. Confidence in the treatment has been throughly established. There has certainly been a decrease in the severe and fatal cases that were formerly prevalent, and many patients who had for years been suffering from a mild degree of ill-health have been set on their feet and made fit again. Seven hundred and fifteen patients were treated during the year at Weti. There are accurate records of the results of the microscopical examination of stools for a period of four complete years; two years (1919-20) at Chake Chake and two years (1922-3) at Weti. About 700 stools have been examined each year (the actual numbers are 1,489 at

Chake Chake and 1,228 at Weti). The percentage of infection works out each year at between 92 per cent. and 95 per cent. of the whole community.

In 1922 a systematic examination of the prisoners in Zanzibar gave an infection rate of only 72 per cent. The much higher rate in Pemba is doubtless due to its higher rainfall, its much wetter and less porous soil, and its greater amount of shade from the more luxurious vegetation. As this very high infection rate has been established for Pemba, it is a question whether further investigation is necessary. The ideal treatment would be the "Mass Treatment" by villages of the whole population as has recently been recommended by the Rockfeller Foundation. It is probable that this could be carried out without great difficulty as the natives are accustomed to treatment for this disease.

The drug used would have to be Carbon Tetrachloride, as all recent work points to this being far cheaper, easier to take, and safer than Ol. Chenapodii. As patients from the villages on the west side of Pemba show a more intense infection than those from the drier east coast, a start should be made on the west side. Other points shown from a study of the statistics of examinations of stools are :—

1. Ascariasis occurs in between 7 per cent. and 11 per cent. of the population.
2. Earth eating (Geophagy) shows a constant annual return of about 7 per cent.
3. Strongyloides Intestinalis (anguillula) was also observed in about 5 per cent.
4. The ova of Trichocephalus Dispar are practically invariably present when looked for.
5. Bacillary Dysentery is very rare in Pemba, only about one case in a year being recorded.
6. Amœbic Dysentery, mostly of the chronic variety occurs but is not common, between four and six cases a year being recorded.

Bilharzia.—Thirty-seven cases of Urinary Bilharzia, due to Schistosomum Hæmatobium, were recorded at Weti and 37 cases at Chake Chake. Owing to pressure of work and lack of hospital accommodation it was not possible to attempt routine intravenous injections of Tartar Emetic. The attempt to use Sodium Antimony Tartrate as an intramuscular injection which has been recommended was found to be too painful and was abandoned. Some patients were successfully treated by rectal injections of Tartar Emetic and some by intramuscular injections of Emetin.

Numerous snails were collected but no species known to be a carrier was discovered. Some of the cases were labourers from the mainland who probably were infected at home, but endemic centres do undoubtedly exist in Pemba, and it is to be hoped that the Economic Biologist will be able to carry out his intention of thoroughly investigating this question. The need for this research has been emphasized in most of the recent annual reports.

Framboesia or Yaws.—In the 1922 Report reference was made to the prevalence of recent infective cases of Yaws, especially among the Wa-Pemba at the north-east of the Island, and to the need of a campaign to eradicate this disease.

Last year 77 cases were treated with Neo-Kharsivan. This year no further supply was obtainable so an attempt was made to use Sodium Bismuth Tartrate (which is identical with the French patent preparation Trepol) as had been recommended in Kenya and Tanganyika.

A supply of pure Sodium Bismuth Tartrate was obtained and 6 grs. dissolved in 40 minims of water, given intramuscularly, was adopted as the standard dose. So far the results of some 150 injections have been entirely satisfactory. Injections are given once a week, and two treatments generally cause the complete disappearance of the Yaws exanthem. It is too early to say whether relapse is more likely to occur after the Bismuth preparation than after an organic arsenical, but at any rate, as the infective state of Yaws is so easily overcome and as the cost of the Bismuth preparation is about one farthing a dose, the possibility and the practicability from a financial standpoint of a real campaign for the eradication of Yaws from the island seems really in sight.

Ulcers.—It is a remarkable fact that the wave of cases of Tropical Phagedaena which has occurred annually for the last four years in May and June was entirely absent. Only three very slight cases were seen at Weti, none of which demanded scraping under an anæsthetic, as compared with 26 such operations performed last year.

Operations.—There were 221 operations at Weti and 41 at Chake Chake during the year. Of those at Weti 157 were on in-patients and 64 on out-patients. General anæsthesia was induced 155 times, Chloroform was used on 125 occasions and Chloroform Ether on 30. Local anæsthetics were :—

Cocain ...	18
Novocain ...	6
B. Eucaine ...	42
Total ...	66

The main operations performed were:—

Radical Cure of Hernia (Halstead's Operation) ...	29
Radical Cure of Hydrocele (Single 19, Double 20, Hæmatocele 9). ...	48
Castration ...	8
Amputation of Scrotum for Elephantiasis ...	12
Suture and cleaning of wounds ...	11
Removal of Tumours (simple) ...	21
Cataract Extraction ...	19
Berlin's Operation for Trichiasis ...	2
Heisrath's Operation for Trachoma ...	1
Thiersch's Grafting ...	1
Circumcision ...	51

The simple tumours were mainly similar to those recorded previously, but included one cyst of Bartholin's gland, and one case of hypertrophy of the male breast. One case of Goundou was seen. The man was an Mgoni from Songea in Tanganyika Territory. This is a very rare disease anywhere on the East Coast. The circumcisions were mostly in Arab or Swahili children. Under about 10 years of age a general anæsthetic was given, but over this age the operation was performed under local Eucain anæsthesia. Every case was treated as an out-patient. The number of parents who apply to have their children circumcised by the Medical Officer, though he be of a different race and religion, shows that they are beginning to appreciate the advantages of aseptic Surgery. The contrast between the results of operation as performed with a dirty razor in the village and with clean instruments in a theatre is very striking; in the former case it means constant pain and discomfort for a period of between one and two months, in the latter there is practically no pain at all and healing takes place in a week or ten days at most. If the numbers desiring circumcision by European methods go on increasing the question of deputing this operation to a native dresser or apprentice who has been thoroughly drilled in aseptic routine will have to be considered.

11. SANITATION.

Dr. Craig left Chake Chake in April, so all the supervision of the Health Department was added to the duties of the Medical Officer, Weti. The Staff of Asiatic Sanitary Inspectors was also below strength.

Under these circumstances no development or progress could be anticipated, and it was difficult to obtain reasonable efficiency of service.

In contrast to 1922 the rainfall was below the average, and the last half of the year was particularly dry.

Epidemic Diseases.—Except for Small-Pox (see later) no serious epidemic occurred. There was some Infectious Coryza or mild Influenza, but it was never severe. One death was due to an imported case of Cerebro-Spinal Meningitis.

Chicken-Pox, Measles and Whooping Cough occurred sporadically.

Small-Pox.—There were seven distinct outbreaks of Small-Pox during the year, all introduced from Zanzibar or by workmen who had passed through Zanzibar in transit.

Four of these outbreaks did not result in any spread of infection, but three definite epidemics occurred, which were fought by vigorous vaccination and local quarantine regulations, patients and contracts being isolated in temporary camps.

1. Outbreak in Msuka District.—Sixteen cases, two deaths. District kept in quarantine from 1st April, 1923, to 18th June, 1923.
2. Case at Wesha, 25th June, 1923, died 7th July, 1923, in Chake Chake Isolation Hospital.
3. Case at Kisiwani near Weti. Isolated in Weti Isolation Hospital 10th July, 1923. Recovered.
4. Epidemic at Estahabu. eight miles from Mkoani, 6th August, 1923 to 2nd September, 1923, eight cases, one death.
5. Case at Changawini, two miles from Mkoani, 21st August, 1923. Recovered.
6. Epidemic at Jambangome, originated by a pilgrim just returned from Mecca, 2nd September, 1923, to 13th October, 1923, five cases, all recovered.
7. Case at Chake Chake, December 1st, died.

Vaccination was vigorously carried on throughout the year, both in connection with Small-Pox outbreaks and as a routine procedure. All the villages in the Weti district were visited during the year.

The following are the numbers of the vaccinations performed :—

Weti District ...	9,702
Chake Chake District ...	2,777
Mkoani District ...	5,485
Total ...	17,964

Vaccine was sent up on ice all through the year and this arrangement proved very satisfactory.

An ice machine was authorized for both Weti and Chake Chake, but only that for Chake Chake was actually ordered. It commenced working in December, but the output is not more than sufficient for the estimated needs of Chake Chake, and transport by land about the island proved wasteful.

GENERAL SANITARY MEASURES.

I. Disposal of Refuse.

Three Horsfall Incinerators were ordered from home. That for Mkoani arrived intact, but its erection was not completed by the end of the year.

That for Chake Chake arrived hopelessly damaged and will have to be replaced.

That for Weti was badly broken and has not been repaired to date. Hence progress during the year is nil.

II. Surface Drainage.

The scheme for Chake Chake mentioned in last year's Report was carried out. The results have not been observed and tested throughout a wet season, so it is too early to say whether the hoped for reduction in anopheline breeding grounds in the township will be attained.

At Weti money was voted for the first instalment of a scheme of surface drainage, but nothing was done during the year.

III. Water Supply.

A new pumping engine was installed at Chake Chake which increases the quantity of water, but the quality of the supply remains as doubtful as before.

At Weti a proper pumping engine was put in during November, and the intermittent four-hours' supply, which had lasted for more than a year, was replaced by a whole-day supply. It has not yet been possible to restore the 24-hours' supply which was provided formerly.

Pariàh Dogs.—Pariah dogs were kept in check by regular poisoning, 246 were destroyed during the year at Weti and 156 at Chake Chake.

Leper Settlements.—In January 76 lepers, who had hitherto been segregated at Walezo, Zanzibar, and cared for by the Sisters of the Roman Catholic Mission, were transferred to Funzi Island, Pemba. Thirty-two of these died during the remainder of the year. The average number of deaths among the lepers at Walezo during the previous three years was 10. The number of deaths attributable to the move must therefore be put down at 22.

The number of new cases of lepers admitted to Funzi during the year was 31, of which 26 were from Pemba and five from Zanzibar. The total number of deaths during 1923 was 35.

During the year 30 huts were erected which was insufficient to allow for the transfer of the Pujini and Kengeja settlements as was intended, and nothing was done in the matter.

The makuti huts show signs of decay. One has already collapsed, and it is doubtful whether many of them will last another year.

A small settlement, consisting of six lepers previously unknown, was discovered on an isolated promontory near Fufuni. These people had voluntarily segregated themselves and were maintaining themselves without help from the Government. It was decided to leave them where they are at present, but it will be necessary to remove them to Funzi with the lepers from Kengeja.

Opium Control.—As a result of the systematic effort that has been made in Pemba to carry out the intention of the "Abuse of Opiates Prevention Decree", the number of licensed opium habitués and the amount of opium with which they were supplied has steadily decreased until it has almost reached a vanishing point.

On the other hand, the practice of drinking a decoction of poppy capsules (generally called Hash Hash) has much increased, Attention was called to this new habit by the District Officer, Chake Chake, in 1919, but it was not then thought to be of sufficient importance to take any action in the matter. The subject was again brought forward by the District Officer, Mkoani, in the middle of last year and was referred by the Secretariat to the Health Office, Zanzibar, for investigation.

The habit is certainly steadily on the increase and steps should be taken to combat it.

The practice of drinking a decoction of nutmeg, which has an action not unlike that of Bhang, is also on the increase. It is recognized by the natives themselves as a vicious and dangerous habit and any steps that could be devised to check it would be beneficial to the community.

Staff.—The Staff of the Health Office at Chake Chake was increased by the addition of a Clerk who has proved himself very useful. A Mosquito Inspector and laboratory boy was added to the staff at Weti. The Leper attendant was transferred from Chake Chake to Weti as all the administration of Funzi is carried out from the latter centre.

Buildings.—Early in the year the old Health Office at Chake Chake collapsed, and a new building is nearing completion. The Health Office accommodation at Weti is still entirely inadequate.

R. HOWARD,
Medical Officer, Weti.

PEMBA PUBLIC HEALTH DIVISION.

Tabulated Report for 1923.

	Chake Chake.	Weti.	Mkoani.
Inspections of premises	7,430	4,690	1,576
General nuisances found	81	25	8
Notices served	81	25	8
Mosquito nuisances found	46	34	3
Notices served	46	34	3
Cesspools regularly oiled weekly	2,136	67	280
Tanks regularly oiled weekly	—	96	—
Water holes regularly oiled weekly	—	18	—
Bush cleared (square yards approximately)	66,010	28,680	6,183
Number of refuse loads removed	13,419	7,290	5,608
Pariah dogs poisoned	156	246	—
Paupers sent to Walezo	6	1	—
Leper suspects examined	20	41	—
Lepers drafted to Funzi	—	31	—
Number of births	480	350	321
Number of deaths	367	629	307

Vaccinations.

Stations.	Vaccinated.	Positive.	Negative.	Unknown.
Chake Chake	2,777	58	140	2,579
Weti	9,702	735	3,125	4,111
Mkoani	5,485	40	296	5,149

APPENDIX II.

Report of the Economic Biologist for 1923.

Staff.—Comprises the Economic Biologist and five native attendants. The Economic Biologist remained in charge of the Veterinary Division until November, 1923.

The Veterinary Officer, as in former years, sent in a large number of blood films, etc., for routine examination.

Work on "Trypanosomiasis" of domesticated animals was continued. The results of these investigations were published in "The Transactions of the Royal Society of Tropical Medicine and Hygiene", Vol. 17, 1923.

Malaria.—Investigations were undertaken to ascertain the varieties of Plasmodia and their relative prevalence in the Protectorate.

The following points were studied :—

1. Parasite rate of African children in various parts of the Protectorate.
    - (*a*) In districts were Anophelinæ (costalis and funestus) are prevalent throughout the year.
    - (*b*) In districts were Anophelinæ are prevalent only during and after the heavy rains.
2. Gametocyte rates of African children.
3. Gametocyte rates of Indian children.
4. Parasite and Gametocyte rates of adult Africans and Indians.
5. Natural infectability rates (sporozoite and oocyste rates) of Anopheles costalis and funestus.
6. Experimental infectability of A. costalis and funestus to the three types of malarial parasites.
7. Natural habits of adult Anophelines and their larvæ.

The results of the investigations on Malaria will be published separately.

Ankylostomiasis.—Soil samples were taken from native cesspits both in the town and in some outlying districts. Ripe anklostome larvæ were detected in numbers; the method used was the one devised by Baerman.

The average number of worms (worm index) harboured by natives has not been ascertained.

A circular was sent out to various districts in Zanzibar and Pemba asking for a census of cesspits suitably constructed with concrete tops, unsuitable with earth tops, and huts with no latrine accommodation. Several villages were investigated, the majority had no latrine accommodation, a few possessed properly built pits. This indicates that soil infestation near villages must be very high.

Bilharziosis.—Ova of Schistosomum hæmatobium and mansoni have been found both in Zanzibar and Pemba. The incidence of the disease is recorded in the Medical Report for the year under review. The Medical Officers in charge of Pemba have obtained very definite data that the disease is endemic in certain areas of the Island and have detected ova in patients who have never left their homes. Numbers of Molluscs, both from Zanzibar and Pemba, have been collected, identified and dissected.

The following are the most dominant species met with :—

Lanistes purpureus.
Cleopatra ferruginea.
Malania amarula.
Meladomus olivaceus.
Ampullaria gradata.
Ureodoxis gagates,

The first two species are abundant both in rivers, ponds, and permanent shallow swamps.

The common African intermediate hosts, Planorbis boissyi, Bullinus contortus, and Physopsis africana have not been found.

On dissecting numbers of the six common Molluscs of the Protectorate only one species was found to harbour Cercariae with bifid tails and no eye spots.

Further morphological and experimental work with this Cercacia showed that it was not a developing form of Schistomum hæmatobium or mansoni.

It may be possible that some of our Molluscs are capable of acting as intermediate hosts to Schistosomum hæmatobium, experiments in this direction will be undertaken as soon as time permits.

Anti-Mosquito Measures.—Early in the year the Economic Biologist was put in charge of all anti-malarial work on the periphery of the town.

Existing concrete drains were cleaned and a free flow of water kept up. Temporary earth channels were constructed when necessary and filled in again after the rains.

Various sites near the town were carefully watched and those which proved to be fertile nurseries for Anopheline larvæ were oiled.

The worst areas were taken in hand and concrete or agricultural drains were installed.

Agricultural drains proved most efficacious in dealing with seepage on the side of hills.

The Senior Medical Officer of Health has given details in his Report for 1923 as to the situation and extent of new drains constructed during the year. The areas treated by permanent drainage have shown marked improvement, as the index of adult Anophelines in adjoining houses has materially decreased.

A small mosquito brigade was formed to work in the large native quarter Ngambo. As a start only Anopheline breeding grounds were oiled or filled in. Gradually the work was extended to include native huts. The native inspectors in charge, who hold Government school certificates, were instructed to explain the breeding habits of mosquitos and, more by moral persuasion than prosecution, to influence native householders to empty their water containers once weekly. The results have been satisfactory as far as Stegomyiæ larvæ are concerned, but the incidence of Culex fatigans is still very high. This can be accounted for by the myriads of cesspits and sullage pools, the former being almost impossible to treat with oil owing to their narrow opening. The oiling or making a native cesspit mosquito proof is a difficult problem. Various methods have been tried with partial success.

Biological Laboratory.—Eight hundred and fifty-eight examinations were made, the majority were blood films taken from native children in connection with work on a Malaria Survey of the Protectorate. Other blood examinations included veterinary material comprising Trypanosoma and Piroplasma.

Fifty-five stools were examined for various protozoal or helminthal parasites. Five showed Entamoeba histolytica, other parasites such as Giardia intestinalis, Entamoeba coli and various ova of helminths were recorded. Specimens of fæces from sheep sent in by the Veterinary Officer showed massive infection with ova of Hæmonchus contortus.

A large number of Anophelinæ were dissected for sprozooit and oocyste rates. As previously mentioned, the Malarial Survey will form a special report when sufficient data is collected.

General.—A few new specimens were added to the Museum; some duplicates and spare material were sent to various institutions interested in tropical medicine and hygiene.

Zoological Survey.—The collectors sent in 1922 by Mr. Loveridge (formerly of the Game Department, Tanganyika Territory) completed their work on mammals.

Two new species were discovered.

A Duiker.	Cephalophus melanorheus.
A Hyrax.	Dendrohyrax adersi.

The entire collection was sent to the British Museum for identification. Duplicate specimens were returned and are now in our museum.

The mammalian fauna of the Protectorate is well represented in the museum of the Public Health Department.

Numbers of rats were trapped in various districts of both islands. This work was undertaken with a view to study the distribution of Mus norvegicus and Rattus rattus rattus; as it was thought that Mus norvegicus was confined to the towns on the coast.

W. MANSFIELD-ADERS,
Economic Biologist.

APPENDIX III.

FIFTH ANNUAL REPORT OF THE ZANZIBAR MATERNITY ASSOCIATION, YEAR ENDING 31ST DECEMBER, 1923.

The following table shows the number of Maternity cases attended among the various communities as compared with those during the four previous years :—

COMUNITY.	1919	1920	1921	1922	1923
Natives of Zanzibar.					
Arabs	...	...	20	13	21
Swahilis (Mohammedans)	...	...	11	11	11
Swahilis (Christians)	...	...	...	...	1
Comoros	...	2	6	6	4
Shihiris	...	...	...	1	4
Foreign Communities.					
Bohoras	9	21	16	23	6
Chinese	...	...	1	1	1
Greeks	...	...	1	...	...
Goans	9	13	5	21	9
Khojas (Ithnasheris)	...	...	19	83	80
Other Indian Mohammedans	...	...	1	4	21
Capetown Mohammedans	...	...	...	...	1
Parsees	1	...	1	4	2
Seychellians	1	...	...	1	2
Totals	46	61	92	178	151

2. It will be observed that the total number of cases attended during 1923 is 151 as compared with 178 during the previous year. This apparent decrease is due to the fact that for half the year the Association was without the services of one of the midwives. This midwife during the remainder of the year attended by private arrangement many cases which would otherwise have found the assistance of the Association necessary, and would have been included in the 1923 total. The Association has therefore been the means directly or indirectly of affording assistance to a larger number of cases than in the previous year and satisfactory progress has been maintained.

3. It is of special interest to note that headway is being made among the Arab, Shihiri and Comoro communities, which are the most backward in realizing the benefits of Western methods.

4. The number of visits paid by the midwives also necessarily shows some decrease for the reason explained above, and as compared with previous years was as follows :—

1919	1920	1921	1922	1923
353	697	1,854	3,549	2,853

5. In last year's report the suggestion was made that the services of a fully qualified lady doctor would prove valuable in extending the work of the Association. The Association has been unable to take further action owing to the inadequacy of the funds at its disposal, but it hopes to achieve the same purpose to some extent by the provision of a Dispensary and Maternity Home in the native quarter of the town. The Wakf Commission has generously undertaken to provide the cost, not to exceed Rs. 30,000, of the building, and the Government to provide the site free of rental. On the ground floor of the building will be a dispensary, separate out-patient rooms for men and women, an ayahs' room and kitchen. On the upper floor will be two maternity wards, a service room and a private room for the nurse in attendance. Steps are being taken to obtain the services of a fully qualified maternity nurse, well acquainted with the people and language, who will have charge of both the dispensary and the wards, and thus it is hoped be brought into contact with those for whom maternity assistance is most necessary. The Government on its part has agreed to provide a native assistant for the dispensary, all drugs and dressings free of charge, and as far as possible daily visits by a Medical Officer.

6. Only very slow progress with regard to the Maternity Home can be hoped for at first. Much prejudice must be overcome before a single application will be made for admission, but such a period of inactivity must inevitably occur no matter when an undertaking of this nature is commenced, and the Association is convinced that the time has now arrived to make an attempt which if successful will prove a most beneficent measure and of far-reaching educational value.

7. From the appended balance sheet it will be seen that the Association is Rs. 3,410-13-0 to the good on the year's working. This is due to the non-payment of salary for half the year to one of the midwives who left the service of the Association on conclusion of agreement. This midwife has now rejoined, and owing to a necessary increase in salaries and the provision of three month's salary of one additional midwife for the Maternity Home, Rs. 12,000 will be required during the coming year for the salaries of midwives alone. In addition to this amount more than Rs. 2,000 will be required for other purposes entailing a total estimated expenditure of Rs. 14,000 for 1924.

8. The total annual income of the Association is estimated at Rs. 10,050 and during the coming year it will be necessary to encroach upon the small reserve fund which at present lies at the disposal of the Association.

9. In providing the cost of the Maternity Home, the Wakf Commission stipulates that no charges shall be made to patients, which will mean an increased expenditure without any corresponding increase of revenue.

10. It is therefore obvious that further sources of income must be sought without delay, and the Association is of opinion that the work undertaken deserves more generous support. It is particularly disappointing to note that the public has apparently ceased to take an interest in the Association, and that only one donation was received during the past year. There has also been reduction in the number of members which now includes only those persons who join the Association to obtain the benefit of a reduction in fees. It has therefore been decided that from 1st July only those who have been members for the previous eleven months shall be entitled to obtain the services of a midwife at the concession rate of Rs. 25.

11. The Association wishes to record its thanks to the Wakf Commission and the Zanzibar Government for the contributions promised in connection with the Dispensary and Maternity Home, also the Government for its annual grant of Rs. 4,500 and to Messrs. Cowasji Dinshaw for continuing their donation.

W. HENDRY,
Honorary Secretary.

May, 1924.

STATEMENT OF ACCOUNT OF THE ZANZIBAR MATERNITY ASSOCIATION FOR 1923.

RECEIPTS.

Balance: To		Rs.	a.	p.	Rs.	a.	p.
Fixed Deposit Receipts		10,000	0	0			
Cash in Bank on 31st December, 1922		2,379	3	0			
					12,379	3	0
Govt. Grant for 1923					4,500	0	0
Subscriptions:							
Membership		490	0	0			
1922 arrears of Datu Hemani fund	Rs. 900						
1923 Subscription of Datu Hemani fund	3,600						
		4,500	0	0			
					4,990	0	0
Fees					1,106	0	0
Donations					100	0	0
Miscellaneous Revenue					791	13	9
				Rs.	23,867	0	9

PAYMENTS.

By		Rs.	a.	p.
Salaries		5,574	12	0
Servants		613	0	0
Rent		660	0	0
Drugs and Dressings		130	13	0
Passages		979	0	0
Contingencies		119	7	9
	Rs.	8,077	0	9
Balance:				
Fixed Deposit Receipts	Rs. 10,000			
Cash in Bank on 31st December, 1923.	5,790			
		15,790	0	0
	Rs.	23,867	0	9

Audited and found correct
Sd. J. C. A. JENKS,
25th March, 1924

Sd. SHAVAKSHAW H. TALATI,
Honorary Treasurer.

Zanzibar, 1st January, 1924.

THE ZANZIBAR MATERNITY ASSOCIATION.

STATEMENT OF RECEIPTS AND PAYMENTS DURING THE YEAR ESDED 31st DECEMBER, 1923.

To	Rs.	a.	p.	By	Rs.	a.	p.
Government Grant for 1923	4,500	0	0	Salaries	5,574	12	0
Subscriptions	4,990	0	0	Servants	613	0	0
Fees	1,106	0	0	Rent	660	0	0
Donations	100	0	0	Drugs and Dressings	130	13	0
Miscellaneous Revenue	791	13	9	Passages	979	0	0
				Contingencies	119	7	9
				Rs.	8,077	0	9
				Balance Rs.	3,410	13	0
Rs.	11,487	13	9	Rs.	11,487	13	9

Audited and found correct
Sd. J. C. A. JENKS,
25th March, 1924

Sd. SHAVAKSHAW H. TALATI,
Honorary Treasurer.

Zanzibar, 1st January, 1924.

THE ZANZIBAR MATERNITY ASSOCIATION.

STATEMENT OF ASSETS AND LIABILITIES ON 31st DECEMBER, 1923.

Liabilities.	Rs. a. p.	Rs. a. p.	Assets.	Rs. a. p.	Rs. a. p.
Liabilities		Nil	Balance on 1st January, 1923 :		
Excess of Assets over Liabilities :					
Fixed Deposit Receipts	10,000 0 0		Fixed Deposit Receipts	10,000 0 0	
Cash Balance in Bank on 31st December, 1923	5,790 0 0	15,790 0 0	Cash in Bank	2,379 3 0	12,379 3 0
			Balance on the year's working ended 31st December, 1923		3,410 13 0
		Rs. 15,790 0 0			Rs. 15,790 0 0

Audited and found correct
Sd. J. C. A. JENKS,
25th March, 1924

Sd. SHAVAKSHAW H. TALATI,
Honorary Treasurer.

Zanzibar, 1st January, 1924.

ANNUAL VETERINARY REPORT

FOR THE YEAR 1923.

SECTION I.—ADMINISTRATION.

A. STAFF.

The Veterinary Staff of the Protectorate consists of :—

*Veterinary Adviser	1
Veterinary Officer	1
Assistant Veterinary Officer	1
Attendants and Boys	16

The Assistant Veterinary Officer was on duty in Pemba in connection with an outbreak of Rinderpest for the greater part of the year

B. FINANCIAL.

The sanctioned expenditure for the Veterinary Division was a total of Rs. 24,434. Revenue from Veterinary Services totalled Rs. 25,819-48 cents. The Revenue is derived from the following sources :—

		Rs.	Cts.
Cattle Importation fees	...	10,373	25
Cattle Exportation fees	...	782	25
Veterinary Hospital	...	148	25
Abattoir charges	...	7,494	75
Wharfage charges for Landing Cattle	(About)	2,000	00
Landing Cattle	...	4,608	98
Cremation fees	...	412	00
	Total Rs.	25,819	48

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*This Officer is also attached in the same capacity to the Uganda and Tanganyika Territory Governments.

EXPENDITURE ON NEW BUILDINGS, REPAIRS, ETC.

	Rs.	Cts.
PIGADURI QUARANTINE PARK.		
Prevention of Erosion ...	1,047	90
Hut for Attendant ...	760	77
Office and Laboratory ...	3,128	91
Repairs to Cowshed ...	412	66
Repairs to Goatshed ...	379	10
Repairs to Dipping-Tank ...	160	20
New Cattle Kraal ...	1,860	28
MJI MPIA.		
Three Cowsheds ...	59,446	00
GULIONI ABATTOIR.		
New Buildings ...	13,162	00
Total Rs.	80,357	82

C. LEGISLATION.

1. The most important decree promulgated during the year was "The Diseases of Animals Decree,'' published in the *Official Gazette*, June 11, 1923. This enactment gives the Veterinary Division wide powers in dealing with infectious diseases of animals.

2. Decree No. 11 of 1923, published in the *Gazette*, May 14, 1923. A Decree to amend the Prevention of Cruelty to Animals Decree. Deals with the importation and landing of cattle.

3. Government Notice No. 86, *Gazette*, June 18, 1923. Slaughter-House rules, amendment.

4. Government Notice No. 92, *Gazette*, June 25, 1923. Prohibits the movement of cattle from the island of Pemba to the island of Zanzibar. Precautions against the spread of Rinderpest.

5. Government Notice No. 93, *Gazette*, July 2, 1923. Regulates the movement of cattle in Pemba. Rinderpest precautionary measures.

6. Government Notice No. 101, *Gazette*, July 23, 1923. Prohibits the importation of cattle from Tanganyika Territory in view of an outbreak of Rinderpest there.

7. Government Notice No. 122, *Gazette*, August 27, 1923. Prohibits the importation of animals from Tanginyika Territory except from Dar-es-Salaam. All animals from Dar-es-Salaam are furnished with a veterinary certificate before shipment. Other ports in Tanganyika Territory have no veterinary control.

SECTION II.—DISEASES OF ANIMALS.

A. Diseases of Ruminants.

Rinderpest.—A serious outbreak of this disease, of which the origin was obscure, occurred in the Island of Pemba.

In March a wireless message arrived from Chake Chake, stating that imported cattle were dying there and I proceeded to Pemba. All sick animals were inspected and *post-mortem* examinations performed on two cadavers. The pathological and *post-mortem* lesions were diagnostic of East-Coast Fever. Smears prepared from the spleens of the dead and glands of the sick, when examined microscopically, confirmed the diagnosis.

Again, about ten days later, another report from the same source was received to the effect that native cattle were dying and that spleen and gland smears examined showed no trace of East-Coast Fever. The Assistant Veterinary Officer proceeded to Pemba and after investigating the disease pronounced it to be Rinderpest.

There is no doubt that the disease originated from the mainland. That it did not come from the Juba Province was proved from the information received from the Chief Veterinary Officer, Kenya Colony. On the other hand, it is a well-known fact that the disease is widespread in Tanganyika Territory. There had been, however, no importations of cattle from this Territory since December, 1922. All cattle imported to Pemba originated from Kismayu or other northern ports.

The District Officer, Chake Chake, was of the opinion that there were no surreptitious landings of cattle from Tanganyika Territory, and it is therefore very difficult to trace the origin of the disease.

The most severe outbreak occurred in the Chake Chake District and the mortality was extremely heavy. Many villages on the east coast lost the majority of their cattle. In other localities the disease ran a very mild course, and many cattle which contracted it recovered.

The disease spread over the whole of the Chake Chake District, and thence to the southern parts of the Weti and northern parts of the Mkoani districts. It is estimated that the losses in the Chake Chake district alone amounted to 3,000.

Heavy losses also occurred in the Weti district, but the disease did not spread to the north, owing to the formation of a barrier of cattle inoculated with Anti-rinderpest serum.

In Mkoani District there were two outbreaks of the disease—one in March and the other in June. In March only the Jambangome area was affected. This area was temporarily isolated and the disease did not spread. Within a week 25 animals died, and the area was not subsequently infected.

In the second outbreak in June the disease crossed the southern barrier and spread to the Mkoani area. According to the District Officer's report the estimated number of deaths from March to September in this district amounted to 321 cattle, representing about 7.5 per cent of the total cattle population in the district. The mortality in this area was very low compared to other districts. The south-west portions of the district and various other places remained entirely unaffected.

The following measures were adopted for combating the disease :—

1. Restrictions were placed on the movements of cattle.
2. The formation of barriers in the north and south, as both these portions of the Island were reported clean.

The northern barrier was about a mile and half deep and seven miles long. All cattle were cleared from this zone. On the northern side of this barrier all animals were inoculated fortnightly with serum. Cattle from Chake Chake District were not allowed to cross this area. The Assistant Veterinary Officer was in charge of this barrier and formed his veterinary camp at Mazambaraoni, in the district of Weti, and placed patrols at danger points.

The same method was adopted in the south, where the District Officer, Chake Chake, took charge.

Prior to the formation of the barriers, 2,285 cattle had already been inoculated in the infected district of Chake Chake.

On the southern barrier, which extended from Masambe to Kikokoni,1,106 animals were inoculated.

On 3rd July I went from Zanzibar to take charge of this line and preparations were made to inoculate the cattle, but before inoculation could be begun the disease had made its appearance in the Mkoani area and thus rendered further inoculation work on this barrier useless. No further outbreak of Rinderpest occurred in this district and only a few deaths were reported in the months of July and August.

It therefore appears that by the time the disease entered this district its virulence had become attenuated.

The northern barrier stretched from Mkindani to Wingwe Pwana and inoculation of cattle on this line with serum was commenced on June 18. On this barrier 5,525 cattle were inoculated.

During this period, June 18th to October 4th, 209 deaths were reported, and in all 12,104 cattle were inoculated.

The total estimated loss in Pemba amounted to 4,000 cattle, representing about 20 per cent. of the estimated cattle population, and the disease has proved a great economic loss to the natives of Pemba; as many villages suffered very heavily. The disease is still smouldering in some parts of Weti District and there is the danger of reappearance if strict measures are not adopted to restrict the movements of cattle.

During the outbreak it was found necessary to prohibit importation of cattle from Pemba into Zanzibar, and coastguards were appointed in the district of Mkokotoni to stop any illicit landings.

Trypanosomiasis.—Two hundred and six cattle were examined (of these, four were infected), all of which were imported from Adella, in Italian Somaliland. The type of trypanosome varied.

There was an outbreak of this disease in a herd of indigenous cows kept at Kinyasini in the district of Mkokotoni. A few animals died and the rest recovered. The parasites found in the blood were of the congolense type.

The following types of Trypanosomes were found in blood films prepared from imported cattle :—

Trypanosoma congolense.
Trypanosoma brucei.
Trypanosoma evansi.
Trypanosoma vivax.
Trypanosoma uniforme.

All infected animals were slaughtered at the Quarantine Park or returned to their port of origin.

Trypanosomiasis in Camels.—Blood examinations of 75 animals were made, of which 24 proved infected on first examination. The majority of these animals arrived from the Italian Somaliland. The infection in most cases was very heavy and the parasites were of the T. evansi-brucei type. The infected animals were slaughtered in the Quarantine Park.

Redwater.—A serious outbreak of this disease occurred in imported Socotran cows housed in the town dairies. Examination of blood films confirmed the diagnosis. Out of 79 cows examined, 37 were positive. It should be remembered that in many instances films and smears were prepared from carcases in a high state of putrefaction and therefore no protozoa were found.

Socotran cows are shipped during the north-eastern monsoon in dhows and sold by their owners to local buyers. During their stay in quarantine they are dipped at a three-day interval. On their release from quarantine they are grazed for various periods before sale on pasturages around and near the town. As these commonages are known to harbour infected ticks, an outbreak as described is always possible.

East-Coast Fever.—As reported previously, this disease is endemic in the Islands of Zanzibar and Pemba. Two outbreaks occurred in the latter Island among cattle imported from Kismayu whilst detained in Quarantine. The first outbreak occurred in the month of March and 28 animals died. During the second outbreak in the month of May four animals died.

For this disease 143 animals were examined and 50 proved positive on microscopical examination; of these 40 were imported cattle.

Two experimental bull calves and a heifer contracted the disease at Mji Mpia and recovered after treatment with salines and soft food. From observations made, it was found that many recover by good care, nursing and rest.

Mji Mpia Dipping Tank was continuously in use throughout the year. Cattle were dipped at a three-day interval. In the previous year animals were dipped at a five-day interval, but this longer interval proved ineffective in keeping the dipped animals free from East-Coast Fever and a three-day system of dipping was again instituted. In all 19,563 animals were dipped during the year.

Outbreak in Zanzibar Town of an unidentified disease in Cattle.—An outbreak of disease started on February 22nd, 1923, and continued up to March 18th, 1923 between which dates. 36 animals died in the Hindu Gao Palan and three in Malindi-Kokoni. The first nine deaths in the Hindu Gao Palan aroused no suspicion, as eight out of these showed on microscopical examination Koch's Blue Bodies in spleen smears. For some time past the owners of these cattle had been dipping irregularly; this would account for a sudden recrudesence of East-Coast Fever.

On March 5th, 1923, *post-mortems* were made on cattle from the same shed which were not indicative of East-Coast Fever and further microscopical examinations of spleen smears were negative.

An examination was made of the byre and about 42 cattle penned in one shed were found to be sick.

The predominating symptoms were thick mucous discharge from the nostrils, excessive lachrymation, evidence of diarrhœa, in some cases blood stained. Temperatures ranged from 103° to 105°.

Post-mortems were made on all animals which died and the evidence collected was of a most varied character. In some cases there was intense congestion of the whole of the intestinal tract, especially marked in the abomasum, but ulceration was slight and in many cases was not detected. One lesion which was found in every *post-mortem* made was a markedly distended gall bladder.

I considered at first that perhaps these lesions were caused by arsenical poisioning, as most of the animals in question had been dipped. Pieces of abomasum and liver were therefore taken from suspected cases and examined, but no trace of arsenic was found.

As the disease continued and in view of the *ante* and *post-mortem* lesions, I considered the symptoms were suspicious of Rinderpest and notified the authorities accordingly.

The following precautions were taken :—

1. All cattle from Hindu Gao Palan confined to their compound with police guard on door.
2. No cattle allowed to enter or approach the building.
3. Daily disinfection of sheds.
4. All people on entering or leaving to disinfect their feet.
5. Manure collected was disinfected, spread in the sun in an open space not frequented by cattle, and later burnt over.
6. Dead animals, wrapped in a sheet soaked in disinfectant and the natural orifices stuffed with cotton wool soaked in Carbolic acid, were taken to the cremation shed and burnt.
7. All butchers were warned that an outbreak of disease had occurred and were ordered to report any sickness among their herds.
8. All cow owners in town notified and recommended that no cattle from outside should enter their sheds.
9. All animals in Quarantine Park were detained indefinitely.
10. The Senior Commissioner informed and asked to make enquiries re outbreak of any cattle disease in the districts.

As the disease did not spread and both the *ante* and *post-mortem* symptoms were so variable, the suspicion of Rinderpest was somewhat nullified.

No suspicious case of the disease in question was seen in cattle imported from the mainland, most careful watch was kept in the abattoir and all abomasa and buccal membranes were carefully examined. It was proposed that subinoculation should be made into a clean animal, but owing to the danger of creating a new focus of disease this was not carried out.

Hæmonchiasis.—Owing to reports received from owners of Indian goats that these valuable animals usually died after a short sojourn in the outlying districts, experimental animals were purchased with a view to ascertaining the cause of this mortality. A number of lambs and goats were kept and grazed at Mji Mpia. All of these experimental animals died of Hæmonchiasis; *post-mortem* examination showed no evidence of Heart Water.

Cattle Disease at Mkokotoni.—In September information was received from the District Officer that cattle were reported sick in certain villages of the Mkokotoni District.

Although the reports at first aroused suspicions of Rinderpest; no characteristic lesions of this disease were found.

The disease did not spread and no further reports of sickness or mortality were received. Blood films prepared from the sick animals were negative for the usual blood parasites.

B. DISEASES OF EQUINES.

Horse-Sickness.—No case reported.

Glanders.—No case reported or detected.

Epizootic Lymphangitis.—No case detected.

Ulcerative Lymphangitis.—One case seen in a mule. The animal was destroyed as incurable.

Trypanosomiasis.—The blood of 70 donkeys was examined, 57 being local and 13 imported from Kismayu and other northern ports; of these, two of the local animals showed Trypanosoma congolense.

C. DISEASES OF CANINES.

Piroplasmosis.—Three dogs examined, one proved positive on blood examination. Treated with trypan-blue and recovered.

Trypanosomiasis.—Three dogs examined with negative results.

Rabies.—No case reported or seen.

TABLE I.

Comparative Table of Deaths in Zanzibar Town and Quarantine Station during the three years 1921-1923.

	1921	1922	1923
Milch Cows ex Dairies ...	36	38	124
Calves ex Dairies ...	24	11	49
Cart Bullocks ...	9	6	22
Oxen ...	8	45	16
Goats	197	380	410
Sheep ...	10	8	20
Horses ...	4	3	1
Donkeys ...	6	18	16
Mules ...	1	3	6
Buffaloes ...	3	1	1
Camels ...	2	1	8
Total	300	514	673

Deaths in imported Socotran cows were due to Piroplasmosis and tick-borne diseases. Many sheep and goats as usual succumbed to pleuro-pneumonia and hæmonchiasis.

TABLE II.

Comparative Table of Animals imported during the three years 1921-1923.

	1921	1922	1923
Oxen ...	1,298	2,987	3,765
Cows ...	156	176	194
Calves ...	42	43	103
Goats ...	9,406	12,994	17,405
Sheep ...	1,858	3,518	4,791
Horses ...	5	8	3
Donkeys ...	24	50	13
Mules ...	1	7	16
Camels ...	16	16	117
Dogs ...	3	2	11
Kids ...	—	—	32
Rabbits ...	—	—	12
Total	12,838	19,801	26,462

The above table shows a considerable increase in the number of animals imported. Most of this stock originated from the Juba Province of Kenya Colony and Northern Somali Ports.

All imported cattle are dipped at a three-day interval in Quarantine.

Total number of imported animals dipped was 9,015.

Equines having no Mallein certificates are subjected to the test.

TABLE III.

Comparative table of Animals exported during the three years 1921-1923.

	1921	1922	1923
Oxen ...	51	266	453
Cows ...	5	6	3
Calves ...	5	—	3
Goats ...	176	258	988
Sheep ...	23	53	29
Kids ...	6	32	14
Donkeys ...	—	41	40
Mules ...	—	1	1
Horses ...	1	5	—
Buffaloes ...	1	4	4
Camels ...	1	—	2
Dogs ...	1	—	8
Total	270	666	1,545

It will be noted that, as compared with the previous two years, there has been a large increase in the number of animals exported. Most of the animals exported go to Pemba.

ABATTOIR.

Table No. IV compares the returns for 1923 with those of the two previous years.

The new slaughter-house at Gulioni was opened on July 23rd, 1923, and provides a long-felt want, as the old abattoir was in a very bad state of repair.

The building consists of two slaughter-halls with separate retention pens for animals awaiting slaughter. Two triperies are attached to the main halls, and are provided with large concrete tanks for cleaning offal.

A small room is also set aside for hanging meat under suspicion. An ample water supply and efficient drainage to the sea have been installed.

This year shows a marked increase in the number of animals killed.

The quality of the meat, especially beef, is not of the best. The majority of the animals are imported from the Juba Province of the Kenya Colony. The best animals are drawn from Tanganyika Territory, but owing to the difficulties of exchange, local prejudice of the importers, small carcases, etc., the expected increase of the imports from this Dependency has not risen. It is to be regretted that so few animals have been derived from this source, but as much influence as was deemed advisable has been exerted on local buyers.

For Measles, 74 carcases were condemned; 30 showing slight infection were passed by the Medical Officer of Health.

For pleuro-pneumonia contagiosa and emaciation, 35 goat and 12 sheep carcases were totally condemned.

Pulmonary tuberculosis was seen in one ox imported from Kismayu.

During the year 144 cattle, 439 goats and 195 sheep were rejected as unfit for slaughter on *ante-mortem* examination and returned to their owners.

Echinococcosis was seen in a number of cows of Indian breed, and Distomiasis of the liver in oxen imported from Tanganyika Territory.

TABLE IV.

Table showing the number of animals examined and slaughtered in the Government Abattoir during 1923 compared with the previous two years :—

	Slaughtered in Government Abattoirs.			Carcases Condemned.					
				Wholly.			Partially.		
	1921	1922	1923	1921	1922	1923	1921	1922	1923
Oxen ..	1413	2262	2858	19	80	74	1027	1644	1746
Cows ..	63	56	126	1	..	..	76	11	86
Calves ..	32	5	5	..	..	..	..	..	..
Goats ..	12781	12737	13733	20	32	35	2313	1974	2126
Sheep ..	1452	2492	3622	1	14	12	425	850	1263
Camels ..	10	3	45	..	..	.	4	3	24
Buffaloes ..	6	6	3	..	..	..	..	..	..
Total ..	15757	17561	20392	41	126	121	3856	4482	5245

TABLE V.

Table showing the number of *Post-Mortems* performed during the year 1923 :—

	No. Performed.	E. C. Fever.	Piroplasmosis.	Hæmonchiasis.	Poison.	Retention of placentea.	Senility.	Pneumonia.	Enteritis.	Pericarditis.	Undiagonesed.
Oxen ..	23	4	..	..	1	.	4	..	..	1	14
Cows ..	106	20	37	..	..	5	2	2	1	2	37
Calves ..	20	4	..	1	..	..	..	..	..	..	15
Buffaios ..	1	..	..	..	..	..	..	..	..	..	1
Camels ..	1	..	..	..	..	..	..	..	..	..	1
Goats ..	4	..	..	4	..	..	..	..	..	..	..
Sheep ..	6	..	..	6	..	..	..	..	..	..	..
Total ..	161	28	37	11	1	5	6	2	1	3	67

Most of the animals which die in the town or in quarantine are subjected to a *post-mortem* examination.

TABLE VI.

Table showing the number of examinations carried out in the Veterinary Laboratory during 1923.

	Number Examined.	Positive.	Negative.
Trypanosomiasis, local stock :—			
Bullocks	21	2	19
Cows	73	2	71
Donkeys	57	2	55
Camels	2	—	2
Dogs	2	—	2
Total	155	6	149
Trypanosomiasis, imported stock :—			
Oxen	206	4	202
Cows	15	—	15
Donkeys	13	—	13
Mules	14	—	14
Camels	75	24	51
Horses	3	—	3
Sheep	1	—	—
Goats	1	—	1
Total	328	28	300
East-Coast Fever, local stock :—			
Cows	8	—	8
Calves	33	10	23
Total	41	10	31
East-Coast Fever, imported stock :—			
Oxen	42	14	28
Cows	63	23	40
Calves	7	3	4
Total	112	40	72
Piroplasmosis :—			
Cows	71	33	38
Calves	8	4	4
Total	79	37	42

RECOMMENDATIONS.

1. IMPORTATION OF BULLS FROM KENYA COLONY IMMUNISED TO EAST-COAST FEVER AND RINDERPEST.

The cattle of Zanzibar are of small size, poor milkers and very much inbred. These animals should be stationed for stud purposes at various cattle centres in the island.

2. LEGISLATION TO ENFORCE CASTRATION OF UNSUITABLE BULLS.

At present bulls of all classes and sizes run with the cows. To ensure a benefit from imported bulls, many of the local animals should be desexed.

3. IMPORTATION OF SHEEP.

That a flock of Somali sheep be purchased. The natives of Pemba in the Kigomascha district are anxious to try sheep breeding. The pasturage in this area is short, plentiful, and should be suitable for these animals. A herd of 20 ewes and two rams should suffice. Approximate cost would be about Rs. 275.

4. PIGADURI QUARANTINE PARK.

This valuable station, which has cost the Government so much money in building, etc., is being slowly destroyed by sea encroachment. Measures should be instituted as soon as possible to arrest erosion.

5. CONSTRUCTION OF A NEW DIP.

All slaughter animals ex quarantine are dipped in the Mji Mpia tank. In 1925 it is expected that about 500 valuable milk cows will be housed at Mji Mpia. These animals should be kept separate from imported stock, as slaughter beasts may at any time introduce disease. The new tank would ensure a revenue to the Government.

6. LAIRAGE FOR SLAUGHTER GOATS.

The Senior Medical Officer of Health in his report has mentioned the insanitary conditions under which these animals are housed in the town.

Owing to unsuitable sheds and overcrowding, Pleuro-pneumonia often kills large numbers of these imported animals. A substantial revenue could be expected by renting the sheds to importers.

7. ACQUISITION OF LAND NEAR ABBATOIR.

The Zanzibar Government has now an up-to-date slaughterhouse. Veterinary inspection of meat, etc., is efficiently controlled but transport of meat from the Abattoir to the central market leaves much to be desired.

At present the meat is man-handled from the Abattoir along a narrow lane to wooden carts, the property of the butchers. The carts are trundled a distance of a mile or more to the central market, covered with flies and dripping blood all along the main road. By the acquisition of a few shops facing the Abattoir, accessibility would be gained enabling a motor-lorry to approach the main doors of the slaughter-house.

8. MOTOR TRANSPORT.

A motor-lorry suitably fitted for carrying meat should be at the disposal of the butchers for rapid transport. The lorry would only be used for about two hours a day in the early mornings, it could be used by the Government for the rest of the day.

A charge would be made for the use of the lorry, which would cover all costs.

9. ACQUISITION OF LAND AT MJI MPIA.

When all the cowsheds and administration block are completed the site will be congested. A strip of land between the Dairy and the main road (Lady Janbai Road) should be acquired. This would ensure good accessibility and sufficient ground for future development.

10. POST-MORTEM ROOM.

A *post-mortem* room with all necessary fittings should be attached to the new destructor. Cremation fees are charged. About 100 to 150 animals are cremated a year.

11. VETERINARY HOSPITAL.

A small Veterinary Hospital should be built. The present buildings at Kisiwandui are almost derelict.

12. COMPLETION OF COWSHEDS AND ADMINISTRATION BLOCK AT MJI MPIA.

This year (1924) is considered to be experimental. Up to the time of writing 105 cows have been housed there and no unforeseen fatalities have occurred. The Indian renters seem perfectly satisfied with the accommodation provided. I consider all future sheds will be easily leased.

13. EXTRA STAFF.

Extra menial staff will be required for the cowsheds at Mji Mpia, seven labourers should suffice.

SHAH MOHAMMED KHAN,
Veterinary Officer.

NOTE BY PRINCIPAL MEDICAL OFFICER.

The work performed by the Veterinary Division during the past year, especially if considered in conjunction with the revenue receipts, is very satisfactory and merits every possible assistance and encouragement.

The recommendations included in the Annual Report of the Veterinary Officer have for the most part to do with the improvement and extension of existing activities, but of even greater importance to the ultimate good of the Protectorate are the recommendations contained in the comprehensive report submitted by the Veterinary Adviser in September, 1922. In this report a more progressive policy is advocated which aims at making the Protectorate self-supporting for milk and meat supplies. Hitherto, little has been done in this direction as some doubt has been felt whether the Protectorate would be able to carry the necessary number of animals to make it self-supporting. The Veterinary Adviser is of the opinion that this object can be achieved if effect be given to his recommendations, and all information since gathered agrees with this view. A further most important factor, which I consider places the matter beyond doubt, is the replacement now in progress of bullock by donkey and mechanical transport. The average life of a draught bullock is estimated at from 14—18 years and as there are about one thousand of these animals in Zanzibar Island alone, their replacement would leave grazing available for several thousand head of slaughter cattle not taken into consideration by the Veterinary Adviser.

Until this Protectorate is self-supporting it is obvious that insufficient advantage is being derived from the valuable asset it possesses in its insular position. The elimination of the risk of disease introduction would prevent heavy losses similar to those recently sustained and would enable more effective measures to be undertaken to eradicate endemic diseases. Individual prosperity would be increased by more of the inhabitants being willing to keep cattle, and the cheaper and more abundant milk and meat supply would react on the general health and well being of the whole population.

Some years must necessarily elapse before the full objective can be attained, but any definite progress in this direction will relieve the difficulty now experienced in obtaining sufficient grazing for quarantined cattle, reduce the risk of disease introduction and make the Protectorate less dependent on the mainland for supplies.

J. A. TAYLOR,
Principal Medical Officer.